2012

Allegro RED

Owner's Manual

Tiffin Motorhomes, Inc.

105 2nd Street NW

Red Bay, AL 35582 U.S.A.

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Volume

2

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105 2nd Street NW ✦ Red Bay, Alabama 35582 U.S.A.

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© Tiffin Motorhomes, Inc.
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DISCLAIMER

Many of the features and appliances described in this manual may or may not be reflected in the actual motor home purchased, depending on the options and models selected by the motor-home owner. All items, materials, instructions, and guidance described in this manual are as accurate as possible at the time of printing. However, because of Tiffin Motorhomes' ongoing and dedicated commitment to excellence, improvement of Tiffin's motor homes is a continuing process. Consequently, Tiffin Motorhomes reserves the right to make substitutions and improvements in its makes and models of motor homes without prior notification. Substitutions of comparable or better materials, finishes, appliances, instrumentation, and instruction may be made at any time it is deemed prudent to provide the customer with the best possible motor home meeting the customer's requirements.

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Table of Contents

Chapter 1

General Information

Delivery 1-2
Dealer Responsibilities 1-2
Customer Responsibilities 1-2
Tiffin Motorhomes Limited Warranty 1-3
Major Equipment Manufacturers 1-3
Warranty Service 1-4
Owner's Information Package 1-5
Customer Relations 1-5
Specification Labels 1-5
Weighing Procedures for the Allegro RED 1-6
Weight Distribution of the Motor Home 1-7

Chapter 2

Driving & Safety Instructions

Safety Considerations 2-2
General Warning 2-2
Prior to Departure 2-3
Driving 2-4
ICC Switch 2-5
Fuels for the Motor Home 2-5
Liquid Propane (LP) Gas System 2-6
LP Gas Regulator 2-8
LP Distribution System 2-8
Recommended Precautionary Practices 2-8
Fire Safety 2-9
Fire Extinguisher 2-9
Smoke Detector 2-10
Emergency Exit Window 2-10
Parking Procedures 2-10
Towing Hitch 2-11

Chapter 3

Heating & Air Conditioning

Furnace 3-2
Air-Conditioning System 3-3
Thermostatic Controls 3-4
Liquid Propane (LP) Tank 3-4
LP Tank Filling Practices 3-5
LP Gas Regulator 3-6
CO/LP Gas Detector 3-7

Chapter 4

Major Appliances & Accessories

Refrigerator 4-2
Microwave / (Opt.) Convection Range 4-4
Air Filtration Fan 4-4
Cook Top and Oven 4-5

TELEVISION SYSTEM OPERATION 4-5
Television Antenna 4-5
Television Satellite Dish Control (Opt.) 4-6
Television Sets 4-6
Infrared Repeater 4-7
AM / FM / CD Stereo System 4-7
Home Theater System 4-8
Cable & Telephone Jack 4-8
Water Heater 4-8
Water Heater Storage 4-10
Pressure-Relief Valve 4-10
CB Radio System Antenna Connection 4-11
Triple Vision Camera Monitor System 4-11
Side Mount Cameras 4-13
Washer / Dryer (Optional) 4-14
Stacked Washer / Dryer (Optional) 4-14
Carbon Monoxide/LP Gas Detector 4-14

Chapter 5

Cabinets & Furniture

Cabinets 5-2
Furniture 5-3
Bedroom Area 5-4

Chapter 6

Structural Features

Chassis Features 6-2
Alignment 6-2

Chapter 7

Electrical Features

General Information 7-2
Circuit-Breaker Boxes 7-2
Auxiliary Start Switch 7-3
Battery Inspection and Care 7-4
Battery Disconnect Panel 7-6
120-Volt AC (VAC) Receptacles 7-6
12-Volt DC (VDC) Receptacles 7-7
Ground-Fault-Circuit Interrupt (GFCI) 7-7
Converter 7-7
Inverter (Optional) 7-8
Electrical Generator 7-9
Automatic Transfer Switch 7-10
Resettable Circuit Breakers 7-10
Fuse Blocks 7-11
Seven-Pin Connector 7-12

Chapter 8

Slide-Out Features

SLIDE-OUT OVERVIEW 8-2
General Considerations 8-2
Operating Precautions 8-2
Extending the Slide-Out Room 8-3
Retracting the Slide-Out Room 8-3

Chapter 9

Exterior Features

Towing Hitch 9-2

Exterior Sides 9-2
Security Lights 9-2
Roof & Ladder 9-2
Leveling Jacks (Hydraulic) 9-3
Electric Steps 9-4
Mirrors 9-6

Chapter 10

Interior Features

Bedspread 10-2
Flooring 10-2
Ceiling 10-2
Window Treatments 10-3

Chapter 11

Plumbing & Bath Features

FRESHWATER SYSTEM 11-2
Monitor Panel 11-2
Kitchen Sink 11-2
Bath, Sink, Shower & Accessories 11-2
Water Pump 11-3
City Water Connection 11-4
Filling the Freshwater Tank 11-4
Sanitizing 11-5
Water Filter (Optional) 11-6
Water Heater Bypass System 11-6
Freshwater Lines 11-6
WASTEWATER SYSTEMS 11-7
General Information 11-7
Toilet 11-7
P-Traps 11-8
Black-Water Holding Tank 11-8
Gray-Water Holding Tank 11-9
Wastewater Disposal 11-9
Sewer Connection and Camping 11-10
No-Fuss Flush 11-10
Exterior Shower 11-11

Chapter 12

Windows, Awnings, Vents & Doors

Windows 12-2
Awning 12-2
Vents 12-5
Doors 12-5

Chapter 13

Routine Maintenance

EXTERIOR CARE 13-2
Washing 13-2
Seals 13-3
Proper Sealants for Application 13-4
Striping and Decals 13-4
Wheel Care 13-5
Roof Care and Maintenance 13-5
Moisture Management 13-6
RV Finish Maintenance 13-10
Tire and Tire Safety Information 13-10
Tire Pressure 13-23
INTERIOR CARE 13-28

Carpet	13-28
Fabrics	13-30
Walls and Ceiling	13-30
Dashboard	13-31
Woodwork and Floors	13-31
Countertops	13-32
Accessories	13-33
Detectors	13-33
Condensation	13-33
ROUTINE MAINTENANCE SCHEDULES	13-34
Monthly	13-35
Every Three Months	13-35
Every Six Months	13-35
Annually	13-35
Winterizing	13-36
De-Winterizing	13-39

Chapter 14

Maintenance & Data Charts

Motor Home Owner's Data Sheet	14-2
Motor Home Maintenance Record	14-3
Motor Home Maintenance Record	14-4
Motor Home Maintenance Record	14-5
Motor Home Maintenance Record	14-6
Motor Home Maintenance Record	14-7
Motor Home Maintenance Record	14-8
Motor Home Maintenance Record	14-9

Chapter

1

GENERAL INFORMATION

TIFFIN MOTORHOMES: "WHEREVER YOU GO…WE GO"

Delivery

Throughout the entire manufacturing process your Tiffin motor home has been regularly inspected by our qualified personnel to assure you of the finest product of the highest quality, **without exception**. However, the final inspection at our factory is not to be the last one. The pre-delivery inspection and system check that your dealer performs are the final inspections done to your particular motor home prior to your actually receiving your new Allegro RED motor home. Your dealer is also available to assist you in understanding the warranties and completing the necessary forms to activate the warranties for the various appliances and accessories installed in your motor home.

Dealer Responsibilities

1. **A pre-delivery inspection and systems check** is performed to assure a thorough inspection of the motor home and to assure the proper operation of all factory-installed components.

2. **A customer walk-through** is performed to familiarize the new customer with the motor home, its systems and components, and their proper and safe operation.

3. Delivery of the **Owner's Information Package** which contains warranty cards and registrations for the vehicle and all factory-installed components from other vendors and suppliers to Tiffin Motorhomes. The detailed operation instructions and maintenance instructions on these components are also included in this package.

4. Assisting the customer in **completing the registration forms** to avoid loss of warranty coverage. The dealer should review the limited-warranty provisions with the customer to stress the importance of completing the warranty cards and registration forms for the components in the motor home to enable the manufacturers to receive them within the prescribed time limits.

5. Providing the customer with **information regarding warranty and non-warranty work** on the vehicle and its separately warranted components.

Customer Responsibilities

The customer is responsible for regular and proper maintenance of the motor home. Properly maintaining your motor home will prevent conditions arising from neglect that are not covered by your Tiffin Motorhomes limited warranty. The maintenance guidelines in this manual and any other, applicable manual(s) should be followed. It is your responsibility and obligation to return the vehicle to an authorized dealer for repairs and service.

To assist you in avoiding problems with your motor home, it is recommended that you do the following:

1. **Read the warranty**. Go over it thoroughly with your dealer to make sure you understand all the terms and conditions of the warranty.

2. **Inspect the motor home**; do not accept delivery until after you have gone through the motor home with the authorized Tiffin Motorhomes dealer. **NOTE:** Some variations may exist between the sales literature and the actual specifics of your particular Allegro RED in the areas of measurements, weights, or quantities.

3. **Please ask questions** about anything you don't fully understand about your Allegro RED; Tiffin Motorhomes is here to serve you and assure that you have all the information necessary for your safe and enjoyable use of your new motor home.

4. When you are taking delivery, **set an appointment for adjustments**. This appointment should be within two weeks after you accept delivery.

5. You are responsible for and expected to **use your Allegro RED in a responsible, safe manner**. Please take the time to familiarize yourself with the proper operation of the motor home and all its features before you attempt to use your motor home.

Tiffin Motorhomes Limited Warranty

The Tiffin Motorhomes limited warranty was provided to you by your authorized Tiffin Motorhomes dealer during the pre-delivery inspection. When you inquire about your Tiffin Motorhomes warranty, please refer to this document. Should you need or desire an additional copy or other information, please contact**:**

Tiffin Motorhomes, Incorporated

105 2nd Street NW

Red Bay, AL 35582 U.S.A.

Telephone: (256) 356-8661; Facsimile: (256) 356-8219

E-Mail: info@tiffinmotorhomes.com

Tiffin Motorhomes will be pleased to send you an additional copy or any other information requested, as may be warranted.

Major Equipment Manufacturers

The following list is a compilation of the vendors and suppliers of the major subsystems and components of your Allegro RED. This list is provided for your convenience and is not meant as a complete substitution of the literature and accompanying "how to contact us" information supplied by those vendors and suppliers in your Owner's Information Package [see below for particulars]. Where appropriate, web-site information is provided for computer users.

- Atwood Mobile Products (800) 646-8557 www.atwoodmobile.com
  - LP Gas Water Heater (815) 877-5700 www.atwoodmobile.com
- Denso Corporation (248) 350-7500 www.globaldenso.com
- Flexsteel Industries (319) 556-7730 www.flexsteel.com
- HWH Corporation (800) 321-3494 www.hwhcorp.com
- Kwikee (541) 942-3888 www.kwikee.com
- Norcold, Inc. (800) 543-1219 www.norcold.com
- Onan Corporation (612) 574-5944 www.onanindiana.com
- Panasonic Corporation (800) 211-7262 www.panasonic.com
- Power Gear (800) 334-4712 www.powergear.com
- RV Products (Coleman A/C) (316) 832-3400 www.airxcel.com
- Saf-T-Alert (CO/LP Alarm) (800) 383-0269 www.safetalert.com
- Sharp Corporation (800) 237-4277 www.sharp-usa.com
- Suburban Manufacturing Co. (423) 775-2131 www.suburbanmanufacturing.com
- The Dometic Corporation (219) 294-2017 www.dometic.com

For those wishing more information (e.g., locations of authorized subsidiaries), the following web site, **www.rvamerica.com/data/s_alist.htm**, should be helpful. This site provides complete, alphabetic listings of all suppliers and vendors for all contemporary recreational vehicles and motor homes.

Warranty Service

If any warranty service may be required, that service needs to be completed during the warranty period (basic warranty: 12 months or 12,000 miles). Tiffin Motorhomes provides a limited warranty on its unitized construction for 10 years and its laminations for 5 years. The basic warranty for the motor home is one year or 12,000 miles.

Any service work performed after the expiration of the Tiffin Motorhomes warranties WILL NOT be covered by those warranties. Exceptions may be made, on an individual basis, to this deadline on account of the unavailability of parts and/or service appointment time where work is to be performed. However, don't rely on the possibility of an exception; please schedule any desired in-warranty work before your warranty expires.

Owner's Information Package

The Owner's Information Package (Figure 1-2) includes valuable documents about your Allegro RED and its components and systems. By consulting the booklets and instruction manuals included in the Owner's Information Package, you will learn how to operate, maintain, and troubleshoot these items safely and effectively. The Tiffin Motorhomes Allegro RED Owner's Guide does not cover every possible detail of equipment—standard and/or optional—installed on or in your vehicle.

Figure 1-2. Owner's Information Package

As with all valuable documentation, please keep them in a safe, secure place for your later use and consultation. When you complete and mail to the respective manufacturer(s) any warranty/guaranty registration card(s), make a photocopy of both sides of each card prior to mailing and keep the photocopy in your permanent records for your Allegro RED Motor Home.

Customer Relations

If you wish to schedule maintenance or service or wish to order parts, you should notify your local authorized Tiffin Motorhomes Dealership to set up an appointment. If you are unsure of the location of your nearest, authorized Tiffin Motorhomes Dealership; please access the Tiffin Motorhomes website at www.tiffinmotorhomes.com and then click on the "Dealer Locater" button, then enter in the appropriate search criteria such as zip code and search radius or dealer name and state, then click on "Find Locations"—the dealer's name, address, and telephone number will then be displayed for your use.

Specification Labels

There are two main numbers used to identify your Allegro RED. The Vehicle Identification Number (VIN) is the legal identification of the completed vehicle. The VIN is the number used by the state for vehicle identification and registration. Additionally, there is a Tiffin Motorhomes serial number (Figure 1-3). The Tiffin number is needed when you plan to make an appointment for service or ordering parts through your Tiffin Motorhomes Dealership or Service Center. This number can be found on the side of the dashboard. A typical sample of this identification label is shown, above, on the right.

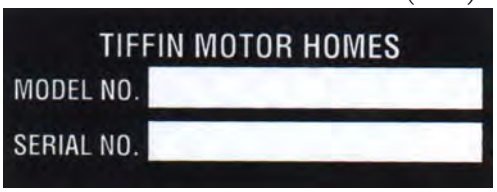


Figure 1-3. Tiffin Serial Number

Another label affixed to your Allegro Bus is the Recreational Vehicle Industrial Association (RVIA) Weight Label which is a required label for your vehicle. Tiffin Motorhomes, a manufacturer-member of RVIA, has the obligation to disclose the following information, at minimum, to the purchaser of the motor home:

- An indication of the contents of the RVIA weight label affixed to the motor home.

- A concise explanation of the following items:

  - Vehicle Weight (VW) distribution.

  - Proper weighing techniques to be used to weigh the vehicle.

  - Specific definitions for the following terminology:

  - **Gross Vehicle-Weight Rating** (**GVWR**) – This is the maximum permissible weight of the motor home when it is fully loaded.

  - **Unloaded Vehicle Weight** (**UVW**) – This is the weight of the motor home, as built at the factory, with full fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, LP gas, or any dealer-installed accessories.

  - **Cargo-Carrying Capacity** (**CCC**) – This is the maximum weight of all occupants including the driver, personal belongings, food, fresh water, waste water, LP gas, tools, tongue weight of towed vehicle [if any], dealer-installed accessories, and the like. The CCC is equal to or less than the GVWR minus the UVW.

  - **Gross Combination-Weight Rating** (**GCWR**) – This is the value specified by the chassis manufacturer as the maximum allowable loaded weight of the motor home with a towed trailer and/or vehicle [if any].

  - **Sleeping-Capacity Weight Rating** (**SCWR**) – This is the maximum weight capacity of the combined number of persons (i.e., number of people multiplied by 154 pounds per person) permitted to sleep within the vehicle.

  - **Gross Axle-Weight Rating** (**GAWR**) – This is the maximum allowable weight for an axle; the GAWR considers the weakest link in the tire, wheel, brakes, hubs, axle, springs, and attaching parts. To illustrate, if the axle is rated at 15,000 pounds and the tires are rated at 3,200 pounds each as a dual installation; then the maximum GAWR would be 12,800 pounds for a four-tire vehicle

- Towing Guidelines – Specific weighing instructions and guidelines are furnished in the Owner's Manual (see below and also in Chapter 2).

Recreational Vehicle Industrial Association (RVIA) Weight Label

Tiffin Motorhomes, Inc.
105 2nd Street NW
Red Bay, AL 35582 U.S.A.
Telephone: (256) 356-8661
Facsimile: (256) 356-8219
E-Mail: info@tiffinmotorhomes.com

Motor Home Weight Information

Model Name: 4000H-Freightliner | Serial Number: 2405 | Year: 2002

Weight Terminology and Definitions

GVWR	Gross Vehicle Weight Rating is the maximum permissible weight of this fully-loaded motorhome.
UVW	Unloaded Vehicle Weight is the weight of this motorhome, as manufactured at the factory, with full fuel, engine oil, and coolants.
SCWR	Sleeping Capacity Weight Rating is the manufacturer's designated number of sleeping positions multiplied by 154 pounds [70 kilograms].
CCC	Cargo Carrying Capacity is equal to GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater), full LP-Gas weight, and SCWR.
GCWR	Gross Combination Weight Rating means the maximum allowable loaded weight of this motorhome and any towed trailer or towed vehicle.

Cargo Carrying Capacity (CCC) Computation – Example

Item	Description	Weight (Lbs.)	Weight (Kg.)
GVWR	Gross Vehicle Weight Rating	14,050	6,386
Minus UVW	- Unloaded Vehicle Weight	-9,250	-4,204
Minus Fresh Water weight	- Fresh water weight of 106 gallons @ 8.3 lbs/gallon [3.8 Kg./gallon]	-880	-376
Minus LP Gas	- 80 gallons @ 4.2 lbs/gallon	-336	-149
Minus SCWR	- 6 persons @ 154 lbs/person	-924	-420
CCC* this motorhome	*(Note: Dealer-installed equipment and towed-vehicle tongue weight will reduce CCC).	2,660	1,237

WARNING: Consult Owners Manual(s) for specific weighing instructions and towing guidelines including auxiliary brake requirements for any towed trailer or towed vehicle.

Revision Date: 24 June 2002

Figure 1-4. RVIA Weight Label

Weighing Procedures for the Allegro RED

To weigh the motor home properly, the motor home should be level when the weighing process is performed. Your Allegro RED motor home has been designed and built in compliance with the recommended limits of the major-component/system suppliers to provide a realistic CCC. It is up to the final user to provide even distribution of the loads brought into the motor home to prevent uneven loading. Once the vehicle is loaded, it

can be taken to any drive-on scales or individual-wheel scales to determine that the final weight is within specified limits for the motor home. The procedure which can be used is as follows:

First, drive the motor home onto the scales so that all wheels are on the scales; this provides the gross vehicle weight (GVW) of the vehicle and can be recorded as such. The GVW should not exceed the GVWR specified for the vehicle. Second, drive the motor home so that the front wheels are off the scales and only the rear wheels remain on the scales; this provides the total weight of the vehicle, save for the front axle. This weight should not exceed the total rating of the axles remaining on the scales. The front axle weight is determined by subtracting the weight from the GVW that was obtained in the first step which was performed earlier. The result should not exceed the listed front-axle weight rating. Chapter 14 contains more specific axle-weight determinations.

Weight Distribution Throughout the Motor Home

To assure the maximum stability of the motor home under static (i.e., parked) and dynamic (i.e., moving) conditions, the distribution of the items to be carried and stored within the motor home and in the storage bays underneath the motor home should be performed in such a manner to strive for reasonably even side-to-side and front-to-rear dispersion of the weight of the stored items. This process will assure that the motor home is not "lop-sided" in weight distribution (i.e., all the stored weight on one side and/or mainly towards the front or the rear)—keeping a center of mass of the motor home essentially centered on a front-to-rear and side-to-side basis will also provide better control of the motor home when it is in motion.

Chapter

2

Driving & Safety Instructions

Safety Considerations

Prior to using your motor home, especially for the first time or after a long period of non-use, please read thoroughly all the instructions in the Owner's Manual and the chassis-manufacturer's manual before attempting to operate your motor home. There are several safety considerations which you should realize and follow while your Allegro RED is in motion. These safety considerations, as well as others meant to preclude any damage to the motor home, are listed in this chapter. Besides the driver, it would be helpful for the passengers to be familiar with these safety considerations and precautions, too.

Warning

Before your motor home is to be towed, be sure that you have read the entire Owner's Manual and that you fully understand the equipment on your motor home and how to use that equipment safely.

General Warning

Warning

Any portable, fuel-burning equipment (e.g., charcoal, propane, butane, wood) must not be used inside the motor home. Any use of such equipment inside the motor home may readily cause fires and/or asphyxiation by carbon-monoxide poisoning. Further, such unauthorized use would probably invalidate your motor-home insurance policy.

In general, there are several "common-sense" safety precautions that should be taken every time the motor home is to be used on the road. These precautions include:

- Only seats with seat belts should be used while the motor home is in motion; those seat belts should be worn by all people (driver, passengers) in the motor home at that time.
- While the motor home is moving, lock all seats in the forward-facing position to provide maximum safety for the users.
- While the motor home is moving, no one inside should ever stand or kneel on seats (e.g., young children).

- In the majority of states, it is the law that seat belts must be used (fastened snugly about the chest and hip areas), anytime the motor home is in motion, to provide desired protection in the event of a crash.

- Any fire extinguisher(s) should be inspected on a monthly basis to assure that each extinguisher is properly charged and ready for operation.

- Any smoke and/or carbon-monoxide (CO)/liquid propane (LP) alarm(s) should be regularly inspected and tested. If being used for the first time, the smoke and/or CO/LP alarm should be properly activated and fresh batteries installed before the motor home is placed into service. Prior to any trip, the smoke and/or CO/LP alarm(s) should be manually tested to assure their correct operation. Immediately replace any defective components (e.g., weak batteries). Never sleep in a motor home not having functional smoke and/or CO/LP alarm(s).

- While the motor home is moving, the sleeping facilities are not to be used.

- In the event of an emergency, be sure to be familiar with all escape exits (doors, escape window). Do not use the emergency window as a routine exit; this is strictly to be used for emergency purposes only.

Prior to Departure

For your continued safety and convenience, the following is a representative "check list" designed to assure your safety while driving:

- Clean all windows, mirrors, and light lenses (front, back, side) to assure that you can "see" and "be seen." Reposition any mirrors or other fixtures to provide an unobstructed view (front, sides, and back) from the driver's seat.

- Remove or secure all loose fixtures (e.g., awnings, flags, antennas, portable lights) to keep them from falling from the motor home when the motor home is in motion.

- Make a "walk-around" visual inspection of the motor home to note any irregularities (e.g., loose trim) or problems (e.g., low tires); correct noted problems accordingly.

- Check all exterior storage-compartment and generator-compartment doors to make sure that they are properly latched. If need be, check inside all exterior compartments to make sure that all cargo and equipment are properly secured so that they won't work loose and become hazards during sudden starts and stops.

- Check tires for proper inflation (i.e., cold inflation pressure: 100 psig); if the motor home has not been used, make sure that the "cold inflation" pressure is maintained. If the motor home has very recently been used, make sure that the "hot inflation" pressure (see the tire-manufacturer's literature to determine appropriate "hot inflation" pressure) is maintained. All tire pressures should be within 1-2 pounds (psig) of each other.

- Examine wheel lug nuts to assure their proper tightness. If any lug nuts were found to be loose, first check the fit of the wheel to the hub to make sure that the wheel is not mis-mounted which would produce a "wobbly" wheel when the motor home is in motion, then tighten the lug nuts.

- Check all fluid levels (e.g., engine oil, transmission fluid, coolant, power-steering fluid, brake fluid, battery fluid [if applicable], windshield-washer solvent) to assure correct levels are maintained. Fill any low reservoirs, as needed.

- DO NOT SUBSTITUTE any other fluids for specified oils, transmission fluid, brake fluid, or other hydraulic fluids—in most instances, substitutions are not acceptable and may void warranties.

- Prior to starting the motor-home engine, make sure that all lines (e.g., water, sewer) and electrical-power cords are disconnected and properly stowed.

- Assure that the leveling jacks are in the "travel" position.

- After entering the motor home, make sure that the electrically-actuated, retractable step has properly operated to retract the step fully before starting the engine of the motor home.

Driving

Various adjustments need to be made to assure the driver's comfort and the safety of the motor home before starting and moving the motor home; these include:

- The driver should adjust the driver's seat, the tilt steering, the exterior rear-view mirrors, and the instrumentation panel lighting (if nighttime) for the driver's comfort and safety. This is especially important for first-time use so that the driver may become accustomed to the "feel" of the motor home and know where the various adjustments are located "before the fact"; not after some need arises while the motor home is in service.

Figure 2-1. Driver's Side Dashboard and Instrumentation Console

- The driver should be familiar with all gauges, instruments, switches, and indicators on the instrument panel (Figure 2-1) prior to driving. Should the driver encounter any "unknowns" on the panel, they should be investigated (via the Owner's Manual) prior to departure so that the driver fully understands these items and their functions.

- One should never adopt a "learn as you go" philosophy, as there are too many controls and switches to be understood before the motor home is actually used. Please take the time to become thoroughly familiar with the entire instrument panel prior to using the motor home.

- Do not operate the cruise-control function during any extreme weather situations (e.g., snow, ice, sleet, heavy rain) or when road conditions are hazardous (icy, snowy, winding roads, city traffic) or when a constant speed of the motor home is not possible or if traffic conditions don't warrant such.

- Avoid driving the motor home through any standing water. If deep enough, such water can wet the brake pads and cause fading of the brakes (i.e., loss of braking power) and lead to excessive sliding or pulling to one side or another. If one has driven through standing water, at the first opportunity safely to do so, check the braking action. If braking has degraded, lightly apply the brakes to allow the brake pads to dry—don't use the motor home when the braking function is significantly reduced.

- Know the limits of operation of the motor home. Don't try to achieve excessive speeds, climb overly steep hills, traverse overly long grades, attempt to use the motor home as an "off-the-road" (OTR) motor home, rapidly switch lanes, or rapidly accelerate or decelerate the motor home. When in doubt about the handling characteristics of the motor home, consult your chassis manual for information.

- The solar or blackout shade is operated by a switch located on the driver's console. Depress the switch to lower or raise the shade. The switch will be labeled "VISOR." The time delay switch must be held a few seconds before it is activated. **CAUTION:** DO NOT over extend either shade as this may block the view of the road.

ICC (Interstate Commerce Commission) Switch

On the driver's side console, one will notice a switch labeled "ICC." This switch (Figure 2-2) is a momentary pushbutton switch--it is active only when the switch is being pressed. This switch enables the driver to communicate with other traffic by flashing the clearance and sidelights of the Allegro RED. If the lights are presently "on," the switch will momentarily turn them "off." If the lights are "off," the switch will momentarily turn them "on."

Figure 2-2. ICC Switch

Fuels for the Motor home

Your motor home is designed to use low sulfur fuel only for the engine used in the routine operation of the motor home—these require prudent and safe handling to assure safety of the motor home and its occupants; namely:

Warning

Liquid propane (LP) gas containers, gasoline, or other flammable liquids are not to be placed or stored inside the motor home because a fire or explosion may occur. LP gas containers (Figure 2-3) are equipped with safety valves that may relieve excess pressure by discharging

Figure 2-3. Liquid Propane Tank

gas into the atmosphere—any containment of that vented LP gas constitutes an explosive hazard.

- Anytime the motor fuel (i.e., diesel fuel) (Figure 2-4) or the LP tank is to be filled, the motor home engine is to be turned off, all pilot lights must be extinguished, and appliances turned off. Further, during any filling operation or connecting/disconnecting of any LP tanks, a NO SMOKING policy should always be observed. In a similar manner, any other comparable devices of the motor home users (e.g., butane camp-lights, propane lights and grills) should be treated in a similar manner to assure the safety of all concerned.

Figure 2-4. Gas Tank Port

- NEVER use an open flame to test for LP gas leaks or to examine the fluid levels in the fuel tanks.
- After filling any LP system, immediately replace and secure all protective covers and caps.
- After closing the LP valve, close and securely latch the LP door to prevent unintentional access or damage.
- NEVER connect natural gas to the LP gas system—LP gas and natural gas are not interchangeable.
- NEVER use any other "burning" equipment (e.g., charcoal grills, wood stoves, butane lights, propane lights inside the motor home—doing so may cause fires and/or asphyxiation.

Liquid Propane (LP) Gas System

A warning label is conspicuously located near the LP gas container; that label reads:

Warning

DO NOT FILL the LP Container(s) to more than 80% of capacity.

Any overfilling of the LP gas container(s) can result in uncontrolled gas flow—a prime condition for a fire or explosion. The LP container (Figure 2-5) should only be filled to 80% of its capacity; the remainder of the cylinder space is an air space to contain expansion of that liquid when subjected to varying ambient-temperature conditions. Filling in excess of 80% of the liquid volume of the container reduces that air space and, thus, creates a condition for possible over-pressurization of the container.

All LP appliances in your motor home have been approved for use in motor homes by a nationally-recognized testing laboratory (i.e., UL and CSA certified). When properly used, LP gas is a clean-burning fuel which can be dependably used. In actuality, the LP container contains liquid propane under high pressure. The liquid, when it passes through the tank valve to a lower pressure, vaporizes into a gas, and then passes through a regulator to maintain a constant pressure. This gas, then, is the actual fuel distributed through the LP-gas manifold system to the LP-based appliances used in your motor home.

Figure 2-5. Liquid Propane Tank

LP-appliance lighting problems are typically caused by an improperly-adjusted gas regulator. NEVER attempt to adjust or reset the gas regulator yourself, as an authorized service technician is needed to make these adjustments. As a good preventive-maintenance activity, the regulator should be checked annually by a service technician and also before every extended trip.

Even though the LP-gas system is leak-checked and verified at the factory at the time of manufacture, normal usage (travel vibrations, etc.) could loosen the fittings. Consequently, it is wise to check the gas fittings periodically for leak tightness.

One can daub some leak-detector solution (e.g., a "liquid-soap"-like solution) on all the fittings, connections, and junctures when the system is under pressure. Should there be any leaks, small bubbles will appear at any leak sites.

Generally, loose fittings can be tightened to stop the leaks. If this process doesn't work, then one must shut off the main gas valve at the LP cylinder(s) and immediately consult an authorized service technician to determine what repairs are necessary. Leaks may also be detected by noting a sulfurous odor (i.e., rotten eggs). DO NOT search for a leak by using a match or open flame.

Warning

When the motor home is not in use, be sure to close the main LP gas valve at the tank. When the LP gas tank is to be refilled, close the main valve to preclude the chance of pilot lights possibly igniting fumes from the LP fuel. As some LP–gas appliances (e.g., refrigerator, furnace, water heater) have Direct Spark Ignition (DSI) systems, it is very important that these appliances be turned off when the LP gas is off. The DSI boards will continue to work (i.e., emit an ignition spark) even when there is no LP gas available.

LP Gas Regulator

The LP gas regulator (Figure 2-6) is the most critical element of the LP-gas distribution system. The regulator converts the high-pressure LP gas from the tank into a reduced-pressure LP-gas supply suitable for use in the various appliances in the motor home. One should regularly inspect visually the regulator system. If any damage or corrosion is noted, contact an authorized service technician to inspect and repair or replace the regulator.

Figure 2-6. LP Gas Regulator

Do not attempt to adjust the regulator yourself; the regulator has been pre-set at the factory. Only a qualified LP service technician using specialized equipment should adjust the regulator.

LP Distribution System

The primary LP distribution system in the motor home is a black, steel pipe running the length of the motor home. The secondary distribution lines running from this main distribution system are usually copper tubing with flare fittings. If any of the gas lines break, do not attempt to splice them—always run new lines to maintain the safety of the motor home. It is strongly recommended that only qualified service technicians perform this work.

Remember, the main valve at the LP gas tank must be closed whenever any gas appliance is to be installed, removed, or serviced—this process prevents LP gas leakage which could result in a possible harmful explosion. If the odor of LP gas is ever detected, immediately discontinue use of any gas appliances and seek the services of a qualified service technician.

Recommended Precautionary Practices

The following practices are recommended to assure continued safety and reliability of the LP gas system; these are, of course, representative; not necessarily exhaustive. In all cases, use common good sense in the use of the LP system.

- Visually inspect the LP fill valve before any refueling operation to look for foreign materials or debris; remove, as necessary, to assure a leak-tight connection.
- Prior to any re-fueling operation of the LP gas system, shut off all the pilot lights.
- NEVER, under any circumstances, check for LP gas leaks with any type of open flame; doing so would probably cause an explosion and subsequent fire.
- Periodically inspect visually the entire LP gas distribution system; do so at least annually and before any major trips. Should problems be noted, seek the services of a qualified service technician to make necessary repairs and perform any maintenance.

Warning

The LP gas distribution system in your motor home is designed for liquefied petroleum (LP) gas ONLY. DO NOT attempt to connect and use any natural-gas or butane-gas systems with this LP gas system.

Fire Safety

As with any enclosed system containing the three required conditions for fire (i.e., combustible materials, oxygen, ignition sources), there will exist the possibility of fire. Tiffin Motorhomes has taken every precaution and design practice to minimize or negate this possibility, but the final determination rests with the owner and user of the motor home. Accordingly, it is in the best interests of the owners, users, and their guests to be aware of basic fire-safety practices and procedures and those particular features that Tiffin Motorhomes has provided for fire safety.

Fire Extinguisher

The Allegro RED is equipped with a fire extinguisher (located on the floor between the passenger's chair and the passenger's console) (Figure 2-7) rated for both Class B (i.e., grease, gasoline, diesel fuel, flammable liquids) and Class C (i.e., electrical) services—these are typically the most likely types of fires to be expected in motor homes. Read and understand the accompanying owner's manual on that extinguisher (found in your Owner's Information Package) and remember the location of the extinguisher. In an emergency, you won't have the time or presence of mind to do so then.

Figure 2-7. Fire Extinguisher

These types of fire extinguishers are pressurized, mechanical devices and require that appropriate care be used in their safe storage and use. The owner's manual will provide necessary guidance for the proper storage, handling, and use of the extinguishers. Prudent preventive maintenance suggests monthly inspection of any fire extinguisher to assure that it is sufficiently pressurized (i.e., the needle on the gauge is in the "normal" zone) and that the mechanical components are not blocked in any way.

Do not test a fire extinguisher by partially discharging the unit—this will cause a loss of pressure and may lodge some fire-retardant materials in the valve mechanism and cause the extinguisher to continue to vent slowly down to zero pressure. Rather, if an extinguisher is ever partially used; continue its use until the unit is completely discharged then have the fire extinguisher fully recharged at an appropriate service center (one can call any fire department for information on having an extinguisher recharged in that particular locality).

DO NOT wait a long time to recharge an empty fire extinguisher; you'll never know when it may be needed.

Should a fire occur inside or around the motor home, evacuate the motor home quickly and calmly—do not panic. In the event of heavy smoke or extensive flames, keep low (crawl if you must) and make your way to the nearest exit (door, emergency window) and leave. If the fire involves a fuel source (e.g., diesel fuel, LP gas);

consider the probability of an explosion and move sufficiently far away to minimize personal harm. If such is available, immediately place a call to the local fire department (or ask someone nearby to do so) to report the fire. Consider the cause and the consequences of the fire and the risks associated with possibly fighting the fire yourself before trying to extinguish it—DO NOT expose yourself or others to unnecessary danger.

Smoke Detector

The Allegro RED motor home is equipped with a battery-operated smoke detector (Figure 2-8) located on the ceiling in the living area of the motor home. Read and become familiar with the operation and periodic testing of this detector. The smoke detector should be tested on a weekly basis, before each trip, and after any period of storage of the motor home.

Figure 2-8. Smoke Detector

If a low-battery condition is noted or the alarm "chirps" to indicate a low-battery condition, immediately replace the battery. It would be prudent to keep replacement batteries in the motor home for any in-transit replacements so that the smoke-alarm capability is never compromised. DO NOT disable the smoke detector for any transient, false alarm (e.g., cooking smoke, dusty furnace, tobacco smoke); rather, ventilate the motor home with fresh air and the alarm will reset.

Emergency Exit Window

In the rear of the motor home, there is an emergency exit window (Figure 2-9) in the bedroom—this window is designed for an emergency exit when it is not practical to exit by the door [also an emergency exit] in the front of the motor home. This window is readily noticeable by its red handle and the red "EXIT" label on that window.

Figure 2-9. Emergency Exit

To use this window as an emergency exit, lift the handle and push outward on the window. As required, the window can be closed by pulling the window inwards and then lowering the handle to latch the window back in place. When the motor home is to be parked, it would be wise to note where this window will be so that this exit won't be blocked (e.g., against a tree, pole, or wall).

Parking Procedures

To park the motor home in any unfamiliar terrain, examine the prospective site for surface irregularities, slopes or inclines, and other discontinuities (i.e., stumps, rocks, external connections for power/water/sewage) and also examine the area immediately above the proposed parking site for obstructions (e.g., tree branches and limbs, signs, overhead wiring).

If the motor home is to be backed into the proposed parking site, strive to have that site be on the driver's left-hand side, as this will allow the driver to watch the rear of the motor home. Back up slowly and use the side

mirrors and the back-up camera as a guide or, better yet, have another person outside provide supplemental guidance to help park the motor home.

When the motor home is finally situated, shift the transmission into neutral, set the air brakes, and then turn "off" the engine. Activate the leveling-jack system (see Chapter 9 for more detail) to level and stabilize the motor home.

If the motor home is to be powered externally, connect the 120 VAC power to the motor home. Turn "on" the LP gas valve at the LP tank. Connect the fresh-water supply and sanitize the water systems (see Chapter 11), as needed. Connect the waste drain hose to the external sewer hook-up. Start the refrigerator, water heater, and furnace; as warranted. Light the oven pilot light, as needed. Certain appliances, such as the refrigerator, will not work properly, if the motor home is not level; so be sure to complete the motor home-leveling process before activating any of the appliances.

Towing Hitch

The Allegro RED is fully capable of towing typical motor vehicles; the motor home is equipped with a Class 3, 10,000-pound towing hitch (Figure 2-10) and associated wiring connector. The wiring connector features a 7-pin connector. If it is desired to connect a trailer brake actuator, the plug for the actuator is located to the left of the steering column under the dash.

Figure 2-10. Towing Hitch

The motor home is capable of towing light loads and instructions for such are found in the chassis-manufacturer's literature in the Owner's Information Package provided with the Allegro RED.

The total weight of the motor home and any vehicle towed by that motor home must not exceed the Gross Combined Weight Rating (GCWR). When the motor home is being weighed, remember to account for passengers and their locations in the motor home. **Any vehicles to be towed by the motor home should have adequate active braking**. The wiring connector provided is a standard seven-pin connector (see Chapter 7, p. 7-12 for more details concerning this connector).

Chapter

3

Heating & Air Conditioning

Furnace

Warning

Never attempt to modify the furnace. To do so may cause fire, explosion, carbon-monoxide poisoning, or asphyxiation. If the furnace is malfunctioning, immediately shut the unit "off" and call a trained service technician to make necessary repairs as soon as possible.

The Allegro RED motor home is equipped with a forced-air furnace fueled by LP gas. The furnace is controlled by the wall-mounted, thermostats (Figure 3-1) located inside the motor home (one in the front of the motor home; the other in the master bedroom)—these thermostats control both the heating and air conditioning for the motor home.

Figure 3-1. Thermostat

In the heating mode, the furnace heats air which, in turn, is circulated through ductwork in the floor of the motor home. If any obstruction(s) block the floor vent(s) or air-return register, then the furnace will not function properly. Therefore, any items stored under the cabinets should be carefully stowed to prevent damaging or crushing the furnace ducting or blocking the warm-air return.

When a furnace is being used for the first time, there may be an initial "burn-off" of manufacturing compounds or residues left on the heat exchanger or in the ductwork which could produce odors, fumes, and possibly some smoke. This occurrence is normal and should not cause concern, unless it persists for an excessive amount of time.

To minimize the after-effects of this "burn-off" process, the initial use of the furnace should be done with all the doors and windows open to permit normal air circulation to dissipate these odors and fumes.

For routine operation of the furnace, set the thermostat to the desired temperature setting and then turn "on" the thermostat; in about a minute, the furnace should begin to operate and warm or hot air should be coming through the ductwork.

To shut down the furnace, turn the thermostat to the "off" position. Even though the thermostat may be turned "off," the furnace system will continue to run for about a minute or so to permit a gradual cool-down of the heating system which is normal.

On a regular basis, thoroughly clean the complete furnace and air-tube passageways to remove dust, lint, and any other possible obstructions. Leak-test the entire LP gas system at least annually. Also check and clean the air-blower system annually.

Any access hatches to the furnace are for authorized service personnel only, as there are no user-serviceable parts on the furnace. Accordingly, do not attempt to tamper with the interior of the furnace.

Warning

Be cautious when washing the exterior of the motor home; water should never be sprayed directly into the furnace vent. Should any water be forced beyond the rain baffles into the furnace vent, the furnace may rust which, in turn, may cause improper combustion and produce unwanted by-products of combustion.

Before the beginning of each travel season, the furnace should be thoroughly cleaned and inspected. Any obstructions, debris, or lint which may obstruct free air flow or impede the operation of the air-circulation system should be removed. For example, accumulated dust or lint could possibly obstruct the orifices for the pilot light or may accumulate on the blower blades and unbalance the operation of the blower. Additionally, any debris in the ductwork, when heated by the furnace, could emit unpleasant odors or possibly become a fire hazard.

Consequently, the furnace system should be periodically cleaned; annually is recommended unless the motor home is subjected to dust levels significantly greater than average; in which case more frequent cleaning is recommended. The Owner's Information Package provides recommended cleaning tips and procedures; when needed, a more thorough cleaning should be performed by a qualified service technician.

Air Conditioning System

The factory-installed air-conditioning system is designed for 120 VAC power supplied either from the external power cord or from the generator. Any unnecessary heat loading (e.g., exposure to direct sunlight for long periods of time; transmittance of sunlight through the windows) will work the air conditioning system harder and may compromise the desired results. Accordingly, if the air conditioning system is to be used, park the motor home in a shady location whenever possible and close drapes on those windows exposed to direct sunlight. Additionally, any heat-producing sources (e.g., oven, unnecessary lights) within the motor home will work against the air conditioning system; so strive to minimize their use.

The air conditioning system is the major consumption device of electrical power in the motor home. When this system is being used in an RV park, cumulative use of these air-conditioning systems by the resident vehicles can create a bigger demand for electrical power than is actually available. Accordingly, at times a "brown-out" condition may arise—this is when the AC voltage normally available drops to a lesser value (e.g., 10-20% below normal or more).

"Brown-out" conditions cause appliances to draw greater currents to make up for the reduced voltage; thereby causing circuit breakers to trip or fuses to blow. Under such conditions, your own motor home

is not at fault; simply reset your breakers and/or replace your fuses. Should such conditions continue, one may wish to turn reduce the electrical load (in this case, turn "off" the air conditioning system for awhile) or start the electrical generator.

To cool the motor home, the thermostat inside the Allegro RED is used—this is the same thermostat which controls the furnace functions (described earlier). The air-conditioned, cooled air is emitted through the vents which are located in the roof throughout the entire coach. The discharge and return air vents run parallel, front to back, on the ceiling. Note that the return vents are similar to the air conditioning vents. This system allows even distribution for the returns instead of forcing an excess amount of return air through two smaller openings. The even return system takes more of the hot air from the motor home, thereby providing cooler air throughout the unit. The air conditioning vents that are mounted on the ceiling are round vent filters (Figure 3-2) that need to be periodically checked for dust accumulation. When dust has accumulated on the filters, remove them and wash in a mild detergent and warm water.

Figure 3-2. Round Vent/Filter

Thermostatic Controls

The following is a brief overview of how best to use the thermostat (Figure 3-3). For more detailed instructions, please consult the thermostat literature in the Owner's Information Package.

1. Turn "on" the power switch on the thermostat(s).
2. Use the Mode switch to select the desired function (e.g., COOL, OFF, HEAT). Note: In the "COOL" mode there will be a delay of several minutes before the refrigerant in the air-conditioning system begins to cool the motor home, as the compressor is on a time-delay circuit and it must also cool the ductwork to the vents first.
3. Select the Fan Mode operation (AUTO or ON) and the Fan Speed operation (LO or HI) to select fan speed desired.
4. Press the Up and/or the Down buttons to set the desired temperature for the motor home.

Figure 3-3. Thermostat

NOTE: If the thermostat is turned "off" or the thermostat loses power (i.e., power failure), the air-conditioning system will resume operation at the last settings programmed into it when electrical power is restored.

Liquid Propane (LP) Tank

The Allegro RED is equipped with an ASME (American Society of Mechanical Engineers)-approved LP tank (Figure 3-4) which is equipped with an automatic pressure regulator. This tank contains liquid petroleum fuel under high pressure. As this fuel passes through the main valve and through the regulator, it is converted into a gas and its pressure is reduced to a safe level for use within the motor home.

Figure 3-4. Liquid Propane Tank

A LP gas-distribution system distributes the gas to those appliances using such in the motor home. The "heart" of this LP gas distribution system is the regulator and that regulator should only be adjusted by a qualified service technician. Most of the problems encountered in lighting the pilots of these appliances are caused by regulator mis-adjustments.

The major component of the LP gas supply is a manifold pipe which runs lengthwise underneath the motor home floor. From this manifold, the various gas appliances are connected by copper tubing with flared fittings so that connections and disconnections can readily be made, as needed.

Should any of the secondary tubing develop a leak, either on the tubing proper or at the fittings; do not attempt to splice any of these lines. Instead, have a qualified service technician run a new length of tubing to the appliance of concern and then have that line leak-tested before placing it in normal operation. To remove, repair, or replace any gas-operated appliance; always close the main gas valve at the LP tank—this measure will provide an additional element of safety to prevent gas leakage and possible, subsequent explosion hazards.

However, if a gas leak is noted or suspected, turn "off" the main valve and keep the LP gas system "off" until that system is inspected by a qualified service technician as soon as possible. Do not delay in addressing any possible gas leaks with appropriate service because of the inherent hazards to safety.

Warning

When the motor home is not being used, the main LP gas valve must be turned "off." Also, turn "off" the main valve when the LP gas tank is to be refueled to avoid the possibility of ignition fuel fumes by the pilot lights. All gas valves on the gas-operated appliances with Direct Spark Ignition (DSI) should also be in the "off" position during refueling and/or maintenance operations. DO NOT store LP, diesel fuel, propane, butane, or other flammable liquids inside the vehicle as these represent a very real fire hazard and possible threat to life.

LP Tank Filling Practices

Any LP gas tank associated with the motor home should never be filled to more than 80% of total capacity; filling should always be done only when the motor home is leveled. If the motor home is not level, the tank may be overfilled (i.e., more than 80% of capacity) and, thus, subject the motor home to possible fire or explosion from resultant uncontrolled gas flows.

LP Gas Regulator

As noted earlier, the LP gas regulator (Figure 3-5) is the "heart" of the LP gas distribution system. This regulator reduces and controls the pressure of the gas on the outlet end to provide a constant supply of gas at a constant pressure to the gas-operated appliances. The regulator has a vent to relieve excess pressure on the inlet side of the regulator, should excess pressure develop in the gas tank and connecting gas line to that regulator inlet. The vent would normally release the excess LP gas to the atmosphere until the over-pressurization condition is eliminated.

Figure 3-5. LP Gas Regulator

This vent should be regularly checked to assure that it is not clogged or obstructed. If that vent is blocked from normal operation, component or system failures may result. If periodic visual inspection indicates any sign of corrosion or degradation, contact a qualified service technician to repair the regulator as soon as possible; DO NOT operate the LP gas system with any faulty component in place.

Occasionally, the inherent moisture in the LP gas can cause a freeze-up of the regulator when the gas passes through the regulator. The regulator reduces the high pressure of the gas on its inlet side to a reduced pressure on its outlet side by permitting a controlled expansion of the gas through the regulator—this gas expansion necessarily cools the gas (by means of the Joule-Thompson effect) and, if cooled enough, may cause any moisture content to freeze.

Important

When a LP gas regulator is installed or re-installed, the regulator must always be installed with the gas diaphragm vent facing downwards. For more information, consult the manufacturer's literature in your Owner's Information Package that came with the motor home.

To minimize or negate this possibility, always keep the main valve to the LP gas tank closed when the system is not in use. When the LP tank is empty, keep the main valve closed until re-filling is to be performed—this process will keep any moisture-laden air from back-flowing into the gas system and trapping unwanted moisture in the LP gas tank. If an empty LP gas tank has been exposed to the atmosphere for an extended time, let a qualified service technician purge the tank before its next filling operation.

CO/LP Gas Detector

Since LP (i.e., liquid propane) gas is more dense than air, the LP gas will naturally settle to the lowest point in an enclosed space—in the motor home, this would be the floor. Because of this fact, the CO/LP gas detector (Figure 3-6) is necessarily mounted close to the floor. To activate the CO/LP-gas sensor on this detector for the first time, remove the sensor activation strip, if such was not performed during the pre-delivery inspection.

Figure 3-6. CO/LP Gas Detector

If the alarm persists in re-arming and giving further alarms; ventilate the motor home (by opening doors and windows) and then check for possible LP gas leaks. If the leak cannot be readily found, then close the main valve to the LP tank and turn "off" all gas appliances and then take the motor home to a qualified service technician after the ventilation process is concluded and the doors and windows again shut.

Chapter

4

Major Appliances & Accessories

Refrigerator

Your coach will either be equipped with a standard Norcold refrigerator or an **OPTIONAL** residential refrigerator dependent upon what was selected. When the Norcold refrigerator is in the "LP gas" mode, make sure that the main LP gas valve is in the "on" position before attempting to start the refrigerator. Please note that the refrigerator is equipped with a semi-automatic energy selector (AES) control system which can set automatically to switch between a 120-volt AC system or a LP-gas operation system. **Note:** If the 12V system is off the refrigerator will not work.

Warning

The majority of LP gas appliances used in motor homes normally vent to the outside of the motor home. When your motor home may be parked in close proximity to a fuel pump (i.e., during re-fueling operations), it is possible that the diesel fumes could enter this type of appliance and possibly be ignited by the burner flame thereby causing a fire or explosion. Accordingly, please use extreme caution when re-fueling the motor home.

A 12-volt power supply (e.g., 12 VDC system of the motor home, auxiliary battery, converter, or motor-home engine battery) is required for proper operation of the electronic control panel. For electrical operation of the refrigerator, either the external electrical power line must be connected to the motor home or the on-board electrical generator must be running to provide the necessary 120-volt AC power. To operate the refrigerator in the LP-gas mode, the main LP gas valve must be "open."

Dometic Refrigerator

To start the Dometic refrigerator (Figure 4-1), on the control panel, press the main power "on/off" button. The refrigerator will be in "ON" mode when the button is in and "OFF" mode when the button is out. Press the Auto/Gas mode selector button to turn the AUTO mode "on" or "off." The Auto Mode will be "ON" when the button is in and "OFF" when the button is out.

Figure 4-1. Dometic 4 Door Refrigerator

The thermostat has five settings where "1" indicates the warmest and "5" the coldest temperature setting. Press the button once to display the current setting. Continue to press repeatedly until the desired setting, e.g. 3, is shown in the LED display. This value is shown for about 5 seconds and then the fresh food compartment temperature is displayed once again.

The Dometic refrigerator is equipped with an automatic travel latch that automatically locks the refrigerator's doors when the motor home's engine is running. When the motor home's engine is turned off, the latch unlocks the

doors. To open one of the refrigerator doors while the engine is running, the travel latch must be manually unlocked. To unlock, simply slide the shutter to the left. The doors will automatically lock again after five seconds.

When the engine is turned on, a signal through the alternator activates the travel latch which in turn locks the refrigerator doors. When turning off the engine, the doors will not open automatically as usual because the refrigerator is turned "OFF." In order to switch on the refrigerator, the doors must be manually unlocked.

When the refrigerator is turned off for a period of time, it is recommended that the refrigerator is emptied, defrosted, cleaned, and the doors placed ajar in the airing position. To ensure the doors stay in the airing position, use the automatic travel latch's airing position functionality:

- Open the refrigerator doors. Slide the shutter to the right. The automatic travel latch is locked.
- Gently close the doors until the pins click into position.
- Verify that a small spacing has been created between the cabinet and the doors and that the doors have not been closed completely. If so, unlock the latch and close the doors again.
- In order to open the doors again, the travel latch must be unlocked. Push to close the doors completely and then, slide the shutter to the left to unlock the latch.

Always keep the refrigerator clean. Cleaning the refrigerator is usually done after is defrosted or put into storage. Use a lukewarm, weak soda solution to clean the interior liner of the refrigerator. Use warm water only to clean the finned evaporator, gasket, ice tray and shelves. To keep the refrigerator operating efficiently, periodic inspection and cleaning of several components once a year is recommended:

- Check the lower vent, upper vent and area between these openings for any obstructions such as bird/insect nests, spider webs, etc.
- Make sure the refrigerator area is free from combustible material, gasoline, and other flammable vapors or liquids.
- If accessible, clean the coils on the back of the refrigerator. Use a soft bristled brush to dust off the coils.

Residential Refrigerator (OPTIONAL):

Your coach may be equipped with an optional residential refrigerator (Figure 4-3). **Please note that the residential refrigerator will only operate on 110V.** Any time that the motor home is not connected to shore power, the refrigerator will have to be operated by use of the inverter.

The refrigerator has its own water filters for the ice maker. **NOTE:** These water filters have to be removed before winterizing your motor home.

For further instructions on how to properly operate and maintain the residential refrigerator, refer to the specific owner's manual located in the Owner's Information Package.

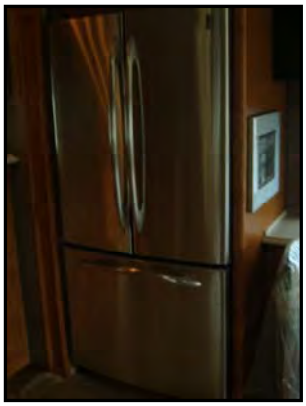


Figure 4-3. Optional Residential Refrigerator

NOTE: The inverter must be "on" for the residential refrigerator to operate if not connected to shore power or the generator!

Microwave Range / (*Optional*) Convection Range

The Allegro RED contains a microwave range [convention feature, optional] (Figure 4-4). All microwave ranges operate on 120-volt AC electrical power, supplied either by the external electrical hookup or by the onboard electrical generator in the motor home.

Figure 4-4. Microwave Range

Touch-pad controls on the microwave range are used for operating the range (i.e., cooking temperature, mode, power level, and cooking time)—see the product owner's manual for specific instructions. For basic operating instructions, care, and maintenance for the proper use of the microwave/(and optional convection) range, please consult the specific manual in the Owner's Information Package.

Air-Filtration Fan

In the Allegro RED, the "exhaust" or air-filtration fan is built into the microwave and its function is to filter the air and exhaust to the outside. This range hood is equipped with a multi-speed fan and a light for convenient use. The hood should be used whenever any cooking is performed to filter any airborne cooking residues and heated air.

Additionally, the range hood can be used as supplemental filtration of other odors and gases including tobacco smoke, candle fumes, and related vapors. The range hood contains filters which can be removed and cleaned or replaced to assure normal operation. Consult the particular owner's manual contained in the Owner's Information Package.

Cook Top and Oven

The Allegro RED is equipped with a three-burner recessed cook top (Figure 4-5) and oven [optional: cook top only]. The oven has a piezoelectric ignition source, rather than a pilot light, to start the oven. To light the burners, turn "on" the gas control knob, wait a couple of seconds, then push the red DSI (direct-spark ignition) button until a flame appears. If the burner does not start after a few attempts, discontinue the process, let the released gas dissipate, then try the process again. The burner knobs operate in a counter-clockwise (CCW) manner and must be gently pushed inwards as they are being turned.

Figure 4-5. Cook Top and Oven

If the oven doesn't have a piezoelectric ignition source, light the oven by pushing inward on the oven control knob and rotating it CCW to the "pilot on" position, then light the oven pilot light located at the back left-hand side of the oven burner—this may take a few seconds until the air in that line is purged and replaced with the LP gas. Do not attempt to adjust the oven pilot light as it has been factory-

adjusted and factory-set. To extinguish the oven pilot light when use of the oven is concluded, push inwards on the oven control knob and turn that knob clockwise (CW) to the "off" position.

Warning

DO NOT USE cooking appliances as a heating source for the motor home. Cooking appliances require fresh air for safe operation. Before using any cooking appliance, make sure that an overhead vent or window is open and/or turn "on" an exhaust fan.

Remember that any LP gas-operated appliance in the motor home will be consuming oxygen in the motor home. If the motor home is totally closed during such operation, the oxygen level may be reduced (and the associated carbon monoxide level may be increased) thereby causing possible harm or death to the occupants through asphyxiation. Always use these appliances with proper ventilation.

DANGER – Notice -- DANGER

IF YOU SMELL GAS, YOU SHOULD IMMEDIATELY:

Extinguish any open flames, pilot lights, and all smoking materials. Do not touch or operate any electrical appliances or switches. Immediately shut off the gas supply at the main tank valve or supply connection. Open doors, windows, and other ventilation openings. Exit the RV to allow entrapped LP gas to dissipate. Have the LP gas system checked to locate and fix the source(s) of the leakage.

TELEVISION SYSTEM OPERATION

Television Antenna

You can automatically search for channels that are active in your area by editing and scanning channels on your remote control. To do this you will need to:

- Press the power button to turn the television ON
- Select English, press "OK"
- Select home use, press "OK"

- Select Cable or Antenna, press "OK"
- Select Start, press "OK"
- Auto programming will begin
- When scanning is complete, press "OK"

If you do not receive the desired channels, re-direct the Antenna with Control located in the upper cabinet in front of the passenger seat. After re-directing the antenna, you must rescan channels.

Television Satellite Dish Control (*Optional*)

The RV may be equipped with a TV Satellite Dish control system (Figure 4-8) to permit access to satellite television. If your motor home is equipped with an optional satellite dish it is capable of receiving High Definition (HD) satellite signal from Dish Network. However, you must subscribe to HD service and install a HD receiver. Factory installed satellite dishes must have a HD receiver in order to obtain a clear picture. Your satellite dish will not receive High Definition programming from Direct TV; however, it is capable of receiving standard definition programming from Direct TV's Satellite 101.

Figure 4-8. Dome Satellite

Follow the directions in the Owner's Manual for this dish-control mechanism to obtain the best orientation of the satellite dish for desired television reception. Remember, that any additional movement of the motor home after the satellite dish control has been set may possibly cause degradation or loss of satellite-television reception. In this case, please re-adjust the satellite dish to re-align that dish for optimal television reception.

Television Sets

Your motor home is High Definition (HD) ready and is capable of receiving channels that are broadcasting in High Definition. In order to receive a clear picture from your satellite dish, you must install a high definition receiver and subscribe to high definition (HD) service. Your motor home does not feature a manual switching box; therefore in order to change from satellite to DVD or TV antenna, please follow the directions listed below:

Figure 4-9. Television Set

To change the mode of your television, press "INPUT" on your remote control. Then select TV, DVD, or Satellite, and press "OK."

NOTE: The booster must be "on" for ANT (a green light will appear) and "off" for the cable. The booster is located in the front-right cabinet of your motor home

The television sets (Figure 4-9) are located in different areas of the motor home. Some are standard TV sets and some are optional TV sets depending on your specific floor plan. All TV sets are High Definition.

The televisions are powered by 120-volt AC electricity; therefore, the motor home must either be plugged into an external source of AC power or using on-board power from the generator. An optional inverter would also permit the 12-volt DC power to be converted into 120-volt AC for the television(s).

Detailed operation of the television(s) is provided in the accompanying owners manuals found in the Owner's Information Package included with the motor home. Generic operations of the television would include a basic "on/off" switch, volume "up/down" control, channel "up/down" selector, and menu "up/down" selector—these functions are found both on the television set itself and on the accompanying remote that comes with the television set.

If the motor home has been wired for satellite TV, there should be an interior jack or jacks and an exterior jack to connect the satellite system. Consult your owner's manual for the satellite system to determine the correct connections to be made.

Infrared Repeater

The Allegro RED will feature an infrared repeater (Figure 4-10) which enables the owner to utilize the satellite remote control from various areas of the coach. An infrared repeater will be located in the bedroom and by the overhead TV located in the driver's area. If your Allegro RED has the optional outside entertainment system, this feature will be located on it also.

Figure 4-10. Infrared Repeater

Figure 4-11. Infrared Repeater

To utilize the infrared repeater, locate the one inside the cabinet (Figure 4-11) that contains the DVD player. Peel the adhesive backing from the back of the infrared repeater and line the infrared repeater against the satellite receiver's infrared repeater. This will allow the infrared repeater to operate when the satellite remote control is directed toward the infrared repeater situated next to the TV. You will now have the convenience of changing the satellite receiver channels from various areas of the coach.

NOTE: The infrared repeater will not work with a Dish Network receiver.

AM / FM / CD Stereo System

Your motor home will be equipped with an AM/FM/CD stereo system (Figure 4-12). This system is powered by the 12-volt DC system of the motor home and operates like any conventio nal car-stereo system. It is important that you read the information provided with the system (found

Figure 4-12. AM/FM/CD Stereo System

in the Owner's Information package).

Home Theater System

The motor home has a home theater system (Figure 4-13) which offers true surround sound for the television and also when DVD programs are viewed featuring the Dolby Surround Sound system. As this home theater system offers many entertainment options, it is worthwhile to read the manual thoroughly before attempting extensive use of this system. This system will also play CDs and MP3 disks, among other media.

Figure 4-14. Optional Home Theater System

Cable & Telephone Jack

The Allegro RED contains an exterior cable jack and also an exterior telephone hookup (Figure 4-15) in an outside storage compartment. This telephone connection permits the owner to access external telephone services (e.g., RV parks) so that these services are available for use within the motor home proper.

Within the motor home there are several telephone jacks (e.g., bedroom, living room) for connecting telephone(s), as desired.

Figure 4-15. Cable & Telephone Jack

Water Heater

Warning

DO NOT APPLY 110 VAC POWER to or LIGHT the water heater until after the water heater is filled with water and the water lines and heater tank are purged of any trapped air. Failure to do so will damage the water heater and may cause additional damage to the motor home.

Before the water heater is to be used, first fill the fresh water system and purge the water lines to and from the water heater by opening all the hot-water faucets until water steadily flows from each one and no "spurting" or "hissing" sounds are further heard. The water heater holds either 6 or 10 gallons of water and uses either the LP gas system or the 120-volt AC electrical system to operate the heater.

Proper and safe operation of the water heater requires that all safety information provided in the owner's manual be read and understood before placing the water heater in service. Take the time to become familiar with this manual (provided in the Owner's Information Package).

The water heater is designed for operation either with LP gas or 120-volt AC electricity. Both modes of operation are now presented.

Figure 4-16. Water Heater Switches

LP Gas – Electronic Ignition Operation (6-Gallon and 10-Gallon Models)

1. Turn the Water Heater Ignition switch (Figure 4-16) to the "on" position.
2. If that switch light stays "on" longer than 15 seconds, turn the remote switch to the "off" position and wait 5 minutes.
3. Repeat Step One.
4. (**For 6-Gallon Models only**): For complete shut-down and also before any servicing:
    a. Turn the Water Heater Ignition switch to the "off" position.
    b. Remove the red wire from the left-hand terminal of the ECO switch (ECO to valve).
5. If the water heater fails to operate because of high water temperature, the heater will go into a lockout condition (indicator light "on"). When the water eventually cools, reset the system by turning the switch to the "off" position for at least 30 seconds, then turn the switch back "on."
6. If a lockout condition persists, contact your authorized dealer.

120-Volt AC Electrical Operation

1. For electrical operation, use the Water Heater switch found on the master control panel in the overhead compartment in the cockpit area above the passenger's-side location.
2. Completely fill the water heater with water and purge the hot-water lines of any trapped air.
3. Turn the Water Heater switch "on." NOTE: Turning the power "on" to the water heater without having previously covered the water-heating element with water may burn out the element and void the warranty.
4. After awhile, check the water heater for proper operation; the water temperature should be approximately 140°F (60°C).
5. If the manual-reset, high-temperature-limit switch should trip the circuit breaker; reset the switch by depressing the reset button--use a pencil or other non-metallic object to depress the reset button. If the high-temperature-limit switch should again trip the circuit breaker, contact an authorized service technician or an authorized dealer.
6. Both the electrical and gas operations of the water heater may be used simultaneously to reduce recovery time of heating water up to desired temperature.

For general maintenance of the water heater or specific information about select steps in operating the water heater, please refer to the owner's manual for this appliance contained in the Owner's Information Package.

Warning

DO NOT STORE any combustible or flammable substances near or adjacent to the water heater. Provide adequate space for ventilation and air circulation.

Water Heater Storage

If the motor home is to be stored during the winter months, the water heater should be drained to prevent damage caused by freezing water contained in the water heater. To drain the water heater, first turn "off" all electrical power, turn "off" the LP gas going to the water heater, then turn "off" the water pump. Open both the hot- and the cold-water faucets to drain the water lines and open the drain on the water heater to drain the entire system.

When re-activating the water heater after the motor home is taken out of storage, make sure that the entire water system, including the water heater, has been filled with water and the lines have been purged of any entrapped air before relighting the water heater. Failure to do so may allow the water-heating element to be turned "on" before such is immersed in water; thereby, causing the premature failure of the heating element and voiding the warranty.

Pressure-Relief Valve

The relief valve for over-pressure and over-temperature conditions is located on the exterior of the water heater. This valve will operate if the water temperature reaches or exceeds 210°F or if the water pressure reaches or exceeds 150 psig. Since the water system in the motor home is a closed system when all water valves are shut, the water-heating cycle can raise the temperature (and, consequently, the pressure) of the water in the water heater; thereby realizing pressure increases approaching 150 psig.

Should this pressure (i.e., 150 psig) be reached, the pressure-relief valve will begin "weeping," that is, minor dripping or leakage from that valve until the pressure drops below 150 psig, at which time the pressure-relief valve will re-seat itself and restrict the water flow. This is normal operation and should not be a cause for alarm. Do not obstruct or block the pressure-relief valve in any way, as this would keep the valve from functioning normally and protecting the hot water system.

CB Radio System Antenna Connection

The Allegro RED comes equipped with an antenna and coaxial-cable connection (Figure 4-17) to enable the owner to install a Citizens Band (CB) radio of choice and operate it conveniently from the Allegro RED. The coaxial-cable connection for the radio is found beneath the dashboard on the driver's side. Accordingly, with an owner-provided CB radio, that radio can be used to communicate with other travelers on the road.

Figure 4-17. CB Radio Antenna

To use the one's CB system of choice, simply follow the directions furnished with the CB radio. (Note: Channel 11 is considered an emergency channel and monitoring this channel may give one information about road conditions, accidents, and related matters potentially affecting the travels of the motor-home operator).

To talk with someone, simply press the "push-to-talk" switch and speak. To listen to any reply, release the "push-to-talk" switch and listen to the speaker. Remember that communications are "one-way," not "two-way" simultaneously—one must talk, then allow some listening time for others to talk. Consequently, it's better to make brief transmissions and allow others to comment; rather than making prolonged speeches and possibly not having anyone answer.

Observe the common courtesies (see the owner's manual for more details) and acceptable speech. Several states have their Highway Patrols monitor the CB frequencies (check for exact channels for each state of interest) to learn about highway problems and emergencies. Be aware of these throughout one's travels, in the event that they may be needed.

Triple Vision Camera Monitor System

The rear-view monitoring system (Figure 4-19) is provided to aid the driver in backing and parking the motor home. A camera mounted on the rear of the vehicle feeds a televised view of the rear of the motor home to the monitor located in the front near the driver. If the mode switch is in the "manual" mode, the monitor will be "on" when the ignition switch is turned "on." If the mode switch is in the "automatic" mode, the monitor will display the picture from the rear-mounted camera only when the transmission is in "reverse" gear. To use this system effectively, please consult the owner's manual for this system; this manual is in the Owner's Information Package.

Figure 4-19. Rear-View Camera Monitor System

Warning

Do not view TV or video programs while driving.

Cleaning and General Maintenance:

1. If your Allegro RED has been parked in direct sunlight resulting in a considerable rise in temperature inside the motor home, allow the unit to cool off before operating.

2. When the casing becomes soiled, clean it with a soft cloth dampened with a mild detergent solution. Never use abrasive cleaners or chemical solvents, as they might damage the casing.

Basic Rear View Camera Operation:

1. Depress the **POWER** switch. The picture appears on the monitor. **POWER** indicator light up green To turn off the picture, press it again to release. The monitor become standby condition. **POWER** indicator light up red.

2. Adjust the **VOLUME** control.

3. Adjust the picture contrast and brightness. The **DAY/NIGHT** selector switch should normally be kept in the **DAY** (released) position. When you view the picture at night or in a tunnel, etc., depress the switch to make the picture less bright (therefore in the **NIGHT** position). Thus, the picture will be easy to view even in a dark place.

When you set the gear level to the "R" position with the **POWER** switch released: The monitor is turned on and the picture from the camera connected to the CAMERA "A" connector appears irrespective of the **INPUT** knob setting.

Warning

Note on the power of the monitor: When you press the POWER switch to release, the monitor becomes standby condition. The power is not turned off until you set the ignition key to the OFF position.

Warning

About the Liquid Crystal Display (LCD) panel:

Do not press on the LCD panel on the monitor unit as doing so can distort the picture or cause a malfunction. The picture may become unclear, or the LCD panel may be damaged.

Clean the LCD panel with a slightly damp cloth. DO NOT use solvents such as benzene, thinner, commercially available cleaners or antistatic spray.

Warning

If your motor home is parked in a cold or hot place, the picture may not be immediately clear. The monitor is not damaged. The picture will become clear after the temperature in your motor home becomes normal.

Some stationary blue or red dots may appear on the monitor. These are called bright spots, and can happen with any LCD. The LCD panel is highly sophisticated, and more than 99.99% of the segments used in the panel are flawless. However, there is a possibility that less than 0.01% of the segments is defective and may not light up properly. However, these segments will not interfere with your viewing.

Side-Mount Camera

As an enhanced aid to driving, the Allegro RED will feature side-mounted cameras on both sides of the motor home. These side-mounted cameras are activated whenever the motor home in transit begins to make a turn. When the "left" turn indicator is used, the left-side camera is activated and that camera displays on the back-up monitor a rearward-oriented view of the driver's side showing that side of the motor home and a limited panorama of what is alongside and immediately behind the motor home as it begins to turn into that direction. In this manner, the typical "blind spot" of most motor homes is drastically reduced or eliminated so that the driver can make those turns with great confidence. Similarly, the "right" turn indicator operates in the same manner to show a rearward view of the right side of the motor home when a right hand turn is made.

Washer / Dryer (*Optional*)

If a washer/dryer unit (Figure 4-20) is installed in the Allegro RED, this appliance is essentially operated as one would normally be used in the home environment.

This appliance operates on 120-volt AC electricity, so power must be available either from an external power-line connection or from the onboard electrical generator. For specific information regarding the washer or the dryer, consult the owner's manuals found in the Owner's Information Package.

Figure 4-20. Washer/Dryer

Stacked Washer/Dryer (*Optional*)

Your Allegro RED may be equipped with an optional stacked washer/dryer (Figure 4-21). The optional stacked washer/dryer can operate on 30 or 50 amp service. It is not recommended to operate the washer or dryer while traveling as this could damage internal components. For specific information regarding the use of the stacked washer/dryer, consult the owner's manuals found in the Owner's Information Package.

Note: The 1 ½" gray water valve at the gray tank waste gate must be fully open when operating the washer/dryer. For specific information regarding the use of the washer or the dryer, consult the owner's manuals found in the Owner's Information Package.

Figure 4-21. Stacked Washer/Dryer (Optional)

Carbon Monoxide/LP Gas Detector

To protect the driver and other occupants of the motor home, the Allegro RED is equipped with a carbon monoxide/LP gas detector (Figure 4-22). This single compact system provides a powerful combined alarm that detects both Carbon Monoxide (CO) and explosive gases Propane (LPG) and Methane (Natural Gas). This detector uses the latest microprocessor technology combined with two electronic self-cleaning sensors that operate independently of each other. The combined unit can detect both CO and explosive gases simultaneously.

Figure 4-22. Carbon Monoxide/LP Gas Detector

Carbon monoxide (CO) is a colorless, odorless, tasteless gas which, when breathed, bonds to the hemoglobin in the red blood cells and, thus, drastically reduces or blocks the transfer of oxygen from the lungs to the rest of the body.

In sufficient concentrations, CO kills by asphyxiation. In lesser amounts, CO makes the victim groggy, lethargic, and unable to think clearly or quickly.

CO is one of the products of combustion for many materials including petroleum-based products (e.g., gasoline, diesel fuel, propane, butane; among others). Since many of the appliances and the engines associated

with the motor home produce CO in their normal operations, it is necessary to assure that CO levels do not rise to dangerous levels within the motor home. In sufficiently high concentrations, CO can kill in minutes.

The most susceptible people to CO poisoning are unborn babies, small children, pregnant women, senior citizens, and people with cardiovascular or respiratory problems. Consequently, it is prudent to check the CO monitor regularly for normal operation and to remain aware of the symptoms of CO poisoning which include dizziness, nausea, vomiting, muscular twitching, throbbing in the temples, incoherent thinking and speech, weakness, sleepiness, and intense headaches.

Should any of these symptoms be experienced in the motor home, one should IMMEDIATELY evacuate the motor home and seek medical help. Shut down the motor home and do not attempt to operate it again until the source(s) of the CO are located and fixed.

Warning

Carbon monoxide gas—derived from products of combustion of diesel fuel, LP gas, and other petroleum-based products—is a deadly gas which can kill motor-home occupants, if allowed to accumulate in sufficient concentration. Assure that all engine operations are not restricted—tailpipes and exhaust ports should not be blocked or restricted in any way. Additionally, any accumulation of exhaust gases outside or underneath the vehicle should be avoided as such may enter the motor home through windows or vents—be careful how and where the motor home is parked to avoid such conditions. Regularly monitor outside conditions to assure that all exhaust gases can readily be dissipated and not enter the motor home inadvertently.

Warning

Never sleep in a motor home when the engine is running—engine exhaust fumes could enter the motor home and cause disability or death. Regularly check the exhaust system to note any leakage sites and, if found, discontinue use of the motor home until they are repaired by a competent, qualified service technician. Do not attempt repairs on the exhaust system yourself and do not modify (temporarily or permanently) the exhaust system at all.

In the event of an alarm, the following steps should be taken quickly:

1. If the alarm signal sounds (4 beeps and flashing or solid red light), operate the Test/Mute button.

2. Immediately move to a source of fresh air, either outdoors or by and open door or window. Do a "head count" to make sure that all people (and pets!) within the motor home have moved to a source of fresh air, too. Do not reenter the motor home or move away from the source(s) of fresh air until the emergency responders have arrived, the motor-home interior is sufficiently aired out, and the alarm has reverted to its normal monitoring function (i.e., no alarms).

3. Call the local emergency services (i.e., 911 in most locales) to summon help -- don't go back into motor home to make this call, but use a cell phone, if available, or have someone else nearby make this call.

4. Should the CO/LP gas detector alarm again activate within a 24-hour period, repeat Steps 1 through 3 and also call a qualified service technician to investigate the possible sources of CO (e.g., fuel-burning equipment and appliances) to locate, identify, and fix such.

Warning

Test the alarm's operation after each storage period, before each trip or at least once per week during use.

Chapter

5

Cabinets & Furniture

Cabinets

Your Allegro RED contains cabinetry installed throughout the entire motor home from the driver's area (Figure 5-1), through the kitchen/dining areas, and back into the bedroom. The cabinetry has been designed and built to provide ample storage space, to be easily accessible, and to be conveniently located to support the areas of concern.

Figure 5-1. Cabinetry

Construction of these cabinets incorporates various hardwoods, raised panels, cabinet doors, and supports. Door pulls, handles, and knobs are installed in a style complementing the particular décor of each Allegro RED so that an aesthetically-pleasing, as well as fully functional, storage capacity is realized.

Figure 5-2. Living Room Cabinets

For the many floor plans available in the Allegro RED product line, cabinet design (Figure 5-2) has been optimized to provide maximal storage for each and every floor plan available. Accordingly, the Allegro RED can readily accommodate the routine materials, supplies, and customer-specific items desired for any travel requirements. Further, these cabinets are designed to contain stored supplies quite securely during travel to minimize or eliminate the possibility of shifting or spilling of cabinet contents during travel. Yet, when the motor home is parked, all stored items are readily available in the cabinets for the convenience of the users.

As the storage requirements will vary somewhat from one floor plan to another, general observations can be made about the Tiffin-supplied cabinetry which may or may not be applicable for your specific Allegro RED configuration.

Cabinets are provided in the kitchen/dining area to accommodate the routine cooking utensils and groceries normally desired for travel. Storage space within these cabinets has been so designed to accommodate the typical sizes and configurations of food supplies (e.g., cereal boxes, condiments, canned goods, bottled liquids) normally taken on travel trips.

Based on Tiffin Motorhomes' extensive experience with travel requirements of the seasoned motor-home users and from Tiffin Motorhomes' own research and development in cabinet-design requirements, the resultant cabinets offer the greatest storage capacity possible. In the bathroom and bedroom, additional cabinets are available for storage of sundries and toiletries specific to these areas.

In the kitchen, a color-coordinated countertop is provided on top of the floor-mounted cabinets. To maintain the appearance of the countertop, clean with a damp cloth. If spotting occurs, clean the countertop with a damp cloth and a mild liquid soap. Should some dried-on residue still persist, let a damp cloth moistened with the liquid cleaner stand directly on top of that residue for 15-30 minutes to loosen the residue, then clean that spot accordingly. Please note that strong chemicals, solvents, and cleaners (e.g., oven cleaner) may damage the surface; so do not use any products not specifically designed for countertop cleaning.

The countertop (Figure 5-3) may be physically damaged, too, if proper care is not taken. Do not cut anything (e.g., vegetables, fruits) directly on the countertop; rather, use a cutting board on top of the countertop to provide necessary protection to the countertop. Excessive heat may also damage the countertop; therefore, any pots or pans taken directly from the range or oven should not be placed directly on the countertop; rather, use trivets or some other form of fireproof heat insulators to hold very hot pots or pans on the countertop.

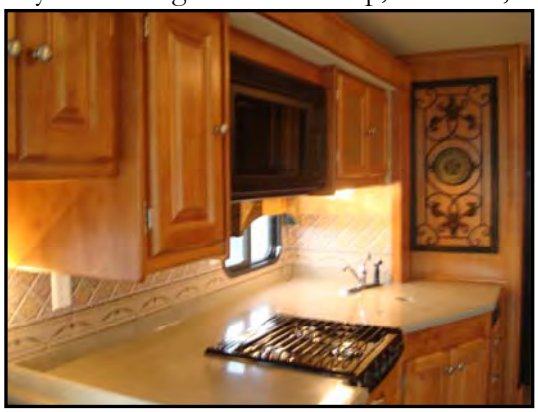


Figure 5-3. Kitchen Cabinets and Countertop

All drawers are equipped with metal slides to provide additional load-bearing strength for the drawers and to permit effortless opening and closing of those drawers, even when they are fully loaded. These metal guides have a slight "locking" action, when closed. To open those drawers, slightly lift up on the drawer handle and then pull the drawer open. To close, push the drawer closed until it "clicks" back into place (i.e., the locking action is engaged). As this cabinetry is typically of furniture-grade quality, any commercial furniture polish or cleaner can be used. Do not try to soak these wooden surfaces with any water or any other liquid; be sure to wipe up spills or residues of any fluids that contact these surfaces to preclude any staining or discoloration of the cabinet surfaces.

Furniture

Kitchen, Dining, & Living Room Areas

On all the various floor plans of the Allegro RED, a built-in dinette booth (Figure 5-5) is standard; a free-standing table (Figure 5-6) is optional. This dinette provides additional storage under the seat area of the booth, in addition to providing additional sleeping facilities. The sleeping area is realized by lowering the dinette-table top and rearranging the seating cushions. Specific directions for converting the booth dinette into a bed are as follows:

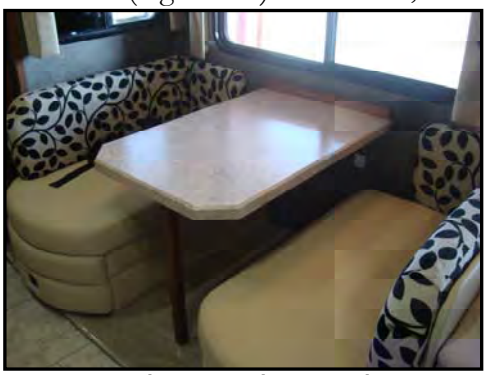


Figure 5-5. Dinette Booth

1. Remove seat back cushions.
2. Slide seat bottoms back.
3. Fold the table leg upwards, while slightly lifting the table, allow the table to swing down and rest between the two booth seats; thus, forming the bed (Figure 5-7).
4. Reinstall the seat back cushions and back rests to make up the mattress for the bed.

Figure 5-6. Dining Table and Chairs

The living room contains a standard sofa (Figure 5-8) which converts into a bed, as required. It may be one of two styles—either a jack

knife bed or an optional air coil hide-a-bed sofa sleeper. The optional air coil hide-a-bed sofa sleeper includes an air pump. It operates by depressing the black latch and unfolding the bed.

Figure 5-7. Dinette Converted into Bed

There may also be a swivel rocker/recliner with adjustable headrest, also coordinated with the décor of the motor home. The driver's seat is an electric-powered, six-way power seat (i.e., movement: up, down, forward tilt, reverse tilt) having swivel features (and recline features for the passenger seat only). When the motor home is parked, the driver's seat can be swiveled to face into the living room.

Figure 5-8. Optional Air Coil Hide-A-Bed Sofa Sleeper

To swivel this chair, first extend the slide-out room (see Chapter 8 for additional detail). Then move the chair backwards as far as possible to gain clearance from the steering wheel. Now the chair can be swiveled without interference. The control switch for the driver's chair is located on the left-hand side in front of the power base controls. In a comparable manner, the passenger's seat is also an electric-powered, six-way seat having essentially the same controls as that of the driver's seat and it is operated accordingly.

Bedroom Area

If a décor-coordinated, quilted bedspread with accessorized pillow shams and accent pillow(s) (Figure 5-9) are included with the bedroom suite, it is recommended that the bedspread be only dry-cleaned to preserve the quality of the bedspread for the longest time possible. Treatment of the bedspread with any of the stain-resistant sprays (e.g., Scotchgard, etc.) will also make the bedspread more resistant to the possibilities of stains and fabric damage and, thus, provide many years of dependable service.

Figure 5-9. Bedroom Decor

Chapter

6

Structural Features

Chassis Features

The chassis (Figure 6-1) of your Tiffin Motorhomes Allegro RED was built and is warranted by Freightliner. The operating instructions for that chassis are included in the Chassis Owner's Manual which is provided with your Allegro RED and is a part of the Owner's Information Package furnished to you by your Tiffin Motorhomes Dealership.

Before you begin using your Allegro RED, please read and follow all recommendations for the proper care, operation, and maintenance of the chassis—this will assure you of pleasant, trouble-free use of vehicle. Should you have any questions about the chassis, however, you should contact your chassis manufacturer as noted in the literature described earlier.

TYPICAL CHASSIS ITEMS COVERED UNDER WARRANTY BY THE CHASSIS MANUFACTURER
Steering Wheel
Steering System
Instrument Panel
Engine
Transmission
Chassis Frame
Axles
Fuel Tank
Suspension and Springs (Front-End Alignment is not covered)
Tires and Wheels
Brakes
Exhaust System
Leaf Springs

Alignment

The Allegro RED motor home you have purchased has been aligned at the factory prior to shipment to you. During the first 10,000 miles of operation of your Allegro RED, the chassis will have a tendency to "settle" and readjust itself in response to the loading of your vehicle. Although it normally is not necessary to realign the Allegro RED before the first 10,000 miles of use; it is, nonetheless, recommended that you have the Allegro RED alignment checked after the first loading of the vehicle.

However, if you feel that you have noted some discrepancy or anomaly in steering operation, please contact your chassis manufacturer or call Tiffin Customer Service at (256) 356-0261 to address your concerns. Tiffin Motorhomes is always ready to assist you with the unique aspects of your specific Allegro RED and has qualified experts readily available to provide you this assistance.

Chapter

7

Electrical Features

General Information

There are two electrical systems in your Allegro RED motor home—these are the 12-volt DC (VDC) system and the 120-volt AC (VAC) system. Most standard appliances require the 120-VAC system, while the majority of the lighting systems used in the Allegro RED use the 12-VDC electrical system. The electrical power for the 12 VDC system is supplied by the batteries of the Allegro RED; those batteries are, in turn, charged by a power converter.

The electrical power for the 120 VAC is supplied by the power cord when the Allegro RED is connected to an external power source or when the on-board electrical generator is in operation. If installed, the optional inverter can also supply 120 VAC electrical power (to limited outlets and limited appliances)—the inverter transforms the 12 VDC electrical power from the batteries into the 120 VAC electrical power for the basic appliances.

Caution

Failure to turn off the 120 VAC appliances when starting or stopping the generator may damage the transfer switch and/or electrical appliances.

To connect the Allegro RED to an external source of 120 VAC electrical power, it is first recommended that all of the circuit breakers are in the "off" position—this is done to prevent any power surge upon connecting the motor home to the external power source. Then unwind the power cord from the electrical compartment located in the compartment behind the driver's-side rear tires. The standard, flexible, power cord supplied with the Allegro RED is designed to handle up to 50 amperes. Make sure that the pins in the male end of the plug are oriented correctly so that they match the power cable, and that they are in good condition (i.e., aren't bent or damaged).

If there is a circuit breaker switch at the "plug" end of the power cord, that breaker should be turned "off" before making the connection. Insert the plug into the mating outlet and then turn the circuit breaker "on." Close and lock the electrical compartment door to protect the contents and to keep them clean and dry. Close the cover on the power box, if so equipped, to avoid an unintentional disconnection and to keep the contents clean and dry. Then switch the main breaker to the "on" position. When properly connected, the 120 VAC system provides power to all the 120 VAC circuits and outlets when the main breaker is turned "on."

Circuit-Breaker Boxes

For the Allegro RED, the 120 VAC and 12 VDC breaker boxes (Figure 7-1) are typically located beneath the refrigerator or in the bedroom. The circuit breakers and associated fuses are installed to protect the electrical system of the Allegro RED from any overloads. Do not attempt to change the electrical circuitry or to add appliances yourself. Please consult an authorized Tiffin Motorhomes Dealership or Tiffin Motorhomes, Incorporated in Red Bay, AL to determine whether any changes you desire are appropriate and acceptable.

Tiffin Motorhomes' qualified staff of electricians can readily determine whether any changes sought (e.g., CB radio, amateur radio, satellite television receiver, personal computer system, and the like) are possible or not and can advise you on how best to realize these enhancements.

Figure 7-1. Circuit Breaker Box

Please note that the 12 VDC fuses and breakers are located in a separate compartment adjoining the 120 VAC breakers. Fusing is provided for the following 12 VDC circuits inside the vehicle: All interior and decorative and overhead lighting, water heater, TV switching box, slide-out lights, power roof vents, monitor panel, and passenger side console switch panel.

Another 12 VDC fuse panel (Figure 7-2) is located in the driver's side, external, front compartment; this panel is protected by a plexiglass shield to prevent accidental short-circuiting of the 12 VDC power system. To protect this 12 VDC system further, **DO NOT STORE anything** in this compartment (e.g., toolbox) which may jostle around, break through the shield, and short out the 12 VDC system—if this system were short-circuited, extensive damage and/or fire could result.

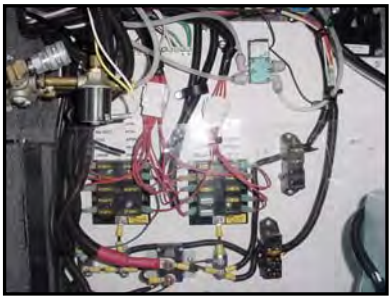


Figure 7-2. Fuse Panel

The following circuitry is protected by this fuse panel: mirror, fog lights, jacks, camera, windshield wipers, dashboard fans, power seats, radio, step cover, optional satellite antenna, 30-amp ignition breaker and 50-amp ignition breaker, and all dashboard resettable circuit breakers.

Another panel of circuit breakers is located in the passenger side, external, rear compartment which contains resettable breakers for the following systems: Slide-outs, 12 VDC disconnect system, storage box lights, and solenoids.

Auxiliary Start Switch

The auxiliary start switch (Figure 7-3) is located on the driver's-side console box (Figure 7-4). This switch briefly connects the Allegro RED coach batteries to the chassis batteries—this allows the chassis batteries to "borrow" power from the coach batteries to assist in starting the engine. If the chassis batteries cannot themselves start the engine in the "normal" mode, hold down the battery-boost switch and retry starting the engine.

Figure 7-3. Auxiliary Start Switch

Figure 7-4. Driver's Side Console

By using the battery-boost switch while trying to start the Allegro RED engne, a jump-start situation is realized between the coach and chassis batteries. If the battery-boost switch is required to start the engine on a regular basis, ask your Tiffin Motorhomes Dealership to check the chassis batteries and the associated charging system.

Battery Inspection and Care

The 12-VDC electrical-power system consists of four 6-VDC batteries wired in a series-parallel combination to provide a final 12 VDC system (Figure 7-5) providing up to 450 Ampere-hours (A-hr) of service.

As the batteries contain a significant amount of electrical energy, they must be handled with due diligence and care. Some of the routine precautions include:

Caution

Disconnect the 120 VAC electrical power cord and the negative terminal from the coach batteries BEFORE working on the Allegro RED electrical system.

Warning

Remove rings, metal watchbands, and any other metal jewelry before working around batteries. If any metallic object (tool, jewelry, etc.) contacts the positive battery terminal or any connection made to that terminal AND also contacts the negative terminal or any of its connections, a SEVERE ELECTRICAL SHORT will occur which could result in an explosion, fire, and/or personal injury. Lead-acid batteries contain diluted sulfuric acid which can be dangerous; avoid direct contact with any battery fluids. Wear eye protection.

Caution

If the Allegro RED ever requires any welding operations on the frame, first disconnect the chassis batteries. Failure to do so will destroy all of the chassis computer system.

When batteries are not used for extended periods of time, they will gradually lose their electrical charge. Therefore, it is necessary periodically to recharge the batteries to increase the operational lives of the batteries. It is also necessary to check the external condition of the batteries on a regular basis. Look for cracks in the battery case and cover. Check the vent plugs and replace them if they are cracked or broken. Keep the battery clean.

Since accumulations of dirt and acid residue around the battery terminals may provide an electrical path for discharging the battery, the area around the terminals should be cleaned periodically. One can use an old toothbrush and a sparse amount of a diluted solution of baking soda (sodium bicarbonate) and water (distilled or de-ionized, preferred; tap water, acceptable) to clean and neutralize any acidic build-up around the battery terminals. If this is done and there is any foaming on the top of the battery, this indicates that acidic residues are being neutralized.

Figure 7-5. 12 VDC Battery System

Rinse the cleaned areas thoroughly with distilled or de-ionized water (tap water is okay, too). Avoid getting the baking-soda solution into the battery fill plugs to each battery cell; this would drastically reduce the effectiveness of the battery (by neutralizing the sulfuric acid in the battery cells) or, worse, "kill" the battery.

Dry the battery cables and terminals to prevent corrosion; to protect those terminals further, use a plastic ignition spray on the terminals. Do not use grease on the terminals, especially on the metal-to-metal connections, as grease may act as an insulator and keep the battery electrical power from entering the cables.

Figure 7-6. Batteries on Slide Tray

If the Allegro RED is to be stored for an extended period of time, the 12 VDC battery system should be disconnected—this will prevent unnecessary drain and corrosion of the batteries and their terminals. To disconnect batteries, simply turn the house battery switch to "off." You will also find this switch located in the battery compartment box.

Additionally, the batteries will, over time, lose some of the water used with the sulfuric acid in the batteries. Following manufacturer's recommendations as found in the Owner's Information Package, periodically check the fluid levels in all the cells of the batteries (be sure to use safety eyewear during this process) and fill those that are low with water (distilled or de-ionized water is preferred; tap water is okay). Don't overfill the cells; follow the filling directions exactly. This battery checkup should be done on a regular basis to realize the fullest service possible from the batteries over the longest time possible.

Figure 7-7. Handle

The batteries are installed on a sliding tray (Figure 7-6) which allows you to extend out of the compartment to check battery and water levels. Located inside the compartment is a handle (Figure 7-7) that must be pulled in order to release the slide tray.

Battery Disconnect Panel

The battery disconnect panel is located inside the battery storage compartment. There is a rotary switch on the upper left-hand side of the compartment which can disconnect the engine battery when the vehicle is to be stored for any appreciable time. Rotating this switch disconnects the engine batteries only, not the house batteries. This feature is designed to prevent the engine batteries from being drained during storage. This switch also disconnects all the 12 VDC circuitry from the batteries; thus removing the total electrical load from those batteries.

Figure 7-8. 12 VDC Disconnect Switch

On the upper, right-hand side of that compartment is another rotary switch which, when activated, disconnects the "house" batteries (i.e., the 12 VDC system for the motor home). When the Allegro RED is to be stored for any length of time, it is wise to disconnect these two 12 VDC systems.

When the Allegro RED is removed from storage, rotate the upper, left-hand switch to reconnect the 12 VDC circuitry to the coach batteries and rotate the upper, right-hand switch to reconnect the "house battery"—the 12 VDC systems are now reactivated. The Freightliner chassis of the Allegro RED may be equipped with a second disconnect switch strictly for the chassis batteries.

If your Allegro RED is so equipped, this "master kill switch" may be located in the rear engine compartment. This switch disconnects all power to the coach so that the coach cannot be started. This switch is used to prevent the ignition circuitry from being accidentally turned on when the engine is being serviced.

For routine, short-term use, there is a "12 VDC disconnect switch" (Figure 7-8) on the switch console located in the stairwell of the Allegro RED. This switch can be used to disconnect the "house" battery from most of the 12 VDC circuits in the motor home so that there is no inadvertent drain on the battery while the owner is away from the motor home (e.g., shopping trips, day trips for sightseeing).

120-Volt AC (VAC) Receptacles

Your Allegro RED Motor Home is equipped with several 120 VAC receptacles (Figure 7-9) located throughout the interior of the motor home. These 120 VAC receptacles are of the "three-prong" variety; the third prong being a grounding pin which provides adequate grounding to protect one from any electrical shock. For these receptacles to work properly; do not use an adapter, cheater, or extension cord which defeats the function of the grounding pin. For the same reason, never remove or bend away the ground prong or pin from any three-prong AC plug so that it would fit a two-prong AC receptacle (i.e., an ungrounded AC receptacle).

Figure 7-9. 120 VAC Receptacle

Never operate the Allegro RED if there is an electrical short present, as an electrical short may deliver an electrical shock to anyone coming in contact with the exterior of the unit. If you should feel even the slightest of electrical shock, immediately disconnect the unit from the 120 VAC power source and locate the electrical fault (i.e., typically, it is a break in the grounding circuit). Do not reconnect the 120 VAC power until after that

electrical fault is fixed—the grounding circuit must be continuous from the frame to the distribution panel, to the power cord, and to the earth ground so that electrical-shock protection is realized.

12-Volt DC (VDC) Receptacles

Your Allegro RED Motor Home may be equipped with a 12 VDC receptacle conveniently located on the dashboard or bulkhead (i.e., the "black" connector plate in the figure). This 12 VDC receptacle (Figure 7-10) can be used for providing power to various items, such as cellular phones or personal computers or portable communications equipment. This receptacle is usually found on the bulkhead in front of the passenger's seat so that it is conveniently available to be used by the personnel in the cockpit area

Figure 7-10. 12 VDC Receptacle (black)

Ground-Fault-Circuit-Interrupt (GFCI) Receptacles

In the kitchen and bath areas, there are 120 VAC GFCI receptacles (Figure 7-11) which provide greater protection against inadvertent electrical shocks. These specialized GFCI receptacles provide both overload and short-circuit protection for the user. The electrical receptacles located in the slide-out are wired through the kitchen GFCI. The exterior receptacles are wired through the bathroom GFCI.

Figure 7-11. GFCI Receptacle

Consequently, if an appliance plugged into a slide-out or exterior receptacle is not working, check for a tripped GFCI in the kitchen or bathroom. In addition, these receptacles protect the user from ground faults between an electrically "hot" wire and ground. The GFCI will not reduce the shock hazard if the short is between a neutral and "hot" wire or two "hot-load" wires.

The GFCI should be tested at least once a month. The 120 VAC electrical system must be "on" for the GFCI to be tested. To test the GFCI the reset button needs to be pushed in fully before starting the test. Push the test button; this will cause the reset button to pop out which means that the protected circuits have been disconnected. Push the reset button back in until a "click" is heard—this will reactivate the protected circuit. If the GFCI is working properly, the reset button will remain in the "in" position.

Converter

As a standard feature on the Allegro, a converter is provided to convert 110 VAC to provide the necessary 12 VDC power for those appliances plugged into that 12 VDC power system. In this manner, most DC-powered appliances can be used inside or outside the Allegro when connected to an external 120 VAC power hookup; this prevents undue drain on the on-board 12 VDC battery system. The converter is conveniently situated in one of the external storage lockers underneath the Allegro. One should not store anything else in this locker to preclude any accidental electrical short circuits.

Inverter (Optional)

Your motor home is equipped with a 2000 watt Inverter. When the 120 VAC power is not available, either from the power cord or the generator, the optional inverter/charger (Figure 7-12) may be used. The control panel for the inverter/charger is located above or near the entrance door.

The inverter/charger has two modes of operation: INVERTER (providing power to your appliances from the batteries) and AC (running from shore power or a generator). Whenever the inverter is in AC mode, it passes power directly to your appliances as well as recharges the batteries using a 3-stage battery charger (Bulk, Absorption and Float). This approach to battery charging provides rapid and complete chagrining cycles without placing undue stress on the batteries. Inverter operation is fully automatic.

Figure 7-12. Inverter/Converter

With search mode enabled, the inverter pulses the AC output looking for an electrical appliance (typically 5 to 100 watts, depending upon the setting you've selected). Whenever there is no load detected, the inverter automatically goes into search mode (sleep) to minimize energy consumption. During this time, the inverter's green LED flashes (fast) to indicate SEARCH mode. When an appliance is switched on inside the coach, the inverter recognizes the need for power and automatically starts the inverter.

Whenever AC Shore Power is no longer sensed, the inverter automatically transfers to battery power with no interruption to your appliances. The inverter's green LED flashes once every 2 seconds (medium flash) to indicate it is running on battery power and providing AC to the coach.

Whenever AC Shore Power is sensed, the inverter automatically transfers to the shore power with minimal interruption to your appliances.

Whenever the inverter is running on nominal AC Shore Power, it charges the batteries. The inverter's green LED stays ON (solid) to indicate the first stage of charging. During bulk charging, the charger supplies the maximum amount of constant current to the batteries. As the battery voltage rises to a set value, the charger will then switch to the next charging mode.

As the inverter continues to run on nominal AC Shore Power, and the batteries have been successfully bulk charged, the charger enters its second stage of charging. The inverter's green LED flashes once every second (fast flash) to indicate absorption charging for 1-3 hours depending upon battery bank selection. The charger then switches to its final chagrining mode.

As AC shore power continues the inverter's green LED flashes once every 8 seconds (slow flash) to indicate the third and final stage of charging. The batteries are held at the float voltage as long as AC is present at the inverter's input. Float charging reduces battery gassing, minimizes watering requirements (for flooded batteries) and ensures the batteries are maintained at optimum capacity.

The inverter monitors the AC Shore Power, the batteries and itself. Whenever a condition occurs that is outside the normal operating parameters, the inverter will take the necessary steps to protect your appliances, batteries or itself from damage.

Whenever the battery voltage reaches a low level, the inverter will initiate Low Battery Cutoff (LBCO) which automatically shuts the inverter down, along with all connected loads, to protect the batteries from over-discharge damage. The inverter's LED turns OFF to indicate the fault condition.

As the inverter is charging, it constantly monitors the batteries. In the event the battery voltage approaches too high of level, it automatically turns off the battery charger to protect the batteries from damage. The inverter's LED turns OFF to indicate the fault condition.

NOTE: High battery voltage may be caused by excessive voltage from the alternator, solar panels, or other external charging sources.

During inverter and AC Shore Power operation, the inverter monitors the AC and DC circuits. In the event of a short-circuit or overload condition, the inverter will shut down. The inverter's LED turns OFF to indicate the fault condition. During inverter operation, if the inverter becomes overheated, it will shut down to protect itself from damage. The inverter's LED turns OFF to indicate the fault condition.

For further reading and additional information on the above, please reference your inverter/charger manual that will be found in your Owner's Information Package.

Electrical Generator

The electrical generator (Figure 7-13) is located in a compartment in front of the motor home between the chassis rails. Access to check the generator's fluid levels can be gained by releasing the hood latches on the front cap.

Figure 7-13. Optional Electrical Generator

Prior to starting or stopping the generator, make sure that all the 120 VAC appliances are turned "off." After the generator has been started, wait until the transfer switch has connected before turning "on" any of the appliances.

The generator can be started from either the remote-start switch located on the dash or directly at the generator itself. The hour meter installed on the generator records the number of hours of operation of the generator motor—this elapsed time is needed for observing necessary maintenance schedules on the generator.

Caution

Failure to turn "off" the 120 VAC appliances when starting or stopping the generator may damage the transfer switch and/or electrical appliances.

For more detailed operating instructions and to determine necessary preventive-maintenance schedules and procedures, review the manufacturer owner's manual.

Automatic Transfer Switch

The automatic transfer box switches AC power from shore to generator to the coach main distribution panel. This is achieved by the closing and opening of contactors that are located in the box interior (see diagram on Automatic Transfer Switch which is located in owner's information package). Power from shore is fed through contacts located on R4 and R5. Power input is sensed by electrical board B1. If shoreline neutral is present it will allow relay R1 to energize which energizes relays R2 and R3 applying shore power to the main control box located in the motor home. If the unit senses that an open neutral condition exists, R1 will not energize not allowing the coach to receive the potentially appliance damaging voltage. Power from the generator is sensed by boar d B1 and after a delay of 15-20 seconds, R4 and R5 energize automatically disconnecting shore power B1 checks for generator neutral and if present allow R2 and R3 to energize allowing generator power to the main control panel.

Caution

Service to this box is to be done by a qualified technician. DO NOT attempt to remove cover unless shore cord is unplugged and generator is off.

If the unit is plugged into shore but no power to coach then make sure the shore outlet has power. If power is present this may indicate the unit is sensing an open neutral condition. Start the generator. If power is restored to the coach then neither the shore plug or outlet may be defective (the neutral line may be broken).

If there is no power to coach from shore or generator then check the generator circuit breaker. If the circuit breakers are not tripped in generator or coach, replace transfer box.

For more detailed information on the automatic transfer switch, please refer to the specific owner's instructions found in the owner's information package.

Resettable Circuit Breakers

The resettable circuit breakers (Figure 7-14) are located within 18 inches of the source of power; that is, the converter and the battery. When the circuit breakers are shut down or electrically tripped, they must be manually reset. To find the circuit breakers, follow the line from the battery or converter approximately 18 inches—this may lead to a junction box or to a cabinet inside the Allegro RED or to a similar location.

Figure 7-14. Circuit Breakers

As needed, manually reset the circuit breaker or breakers as shown in the accompanying figure. Be careful when working around these connections as an accidental, electrical short to ground (i.e., momentarily connecting the "positive" or "hot" terminal to any part of the chassis) can be hazardous and harmful.

Fuse Blocks

Some of the electrical circuitry within the motor home is protected by various fusing systems. Some of these fuse blocks are immediately accessible on the driver's side exterior compartment. These fuse blocks (Figure 7-15) protect some of the major electrical systems of immediate concern to the driver.

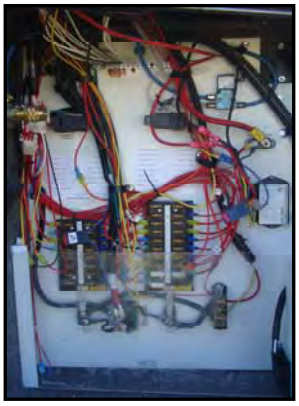


Figure 7-15. Fuse Blocks in exterior compartment on driver's side

Should there be any electrical failure of these components or systems, the first diagnostic or troubleshooting procedure should be to check the fuses and have available replacements to replace any blown fuses, as may be warranted.

Also the Allegro RED contains a computerized diagnostic center usually attached to the steering column under the dash. This center permits a computer to be connected to the on-board diagnostic center monitoring many of the operating functions and parameters of the engine so that the current operating status of the engine can be determined and any anomalies or problems may be noted. This diagnostic tool enables the motor home owner to maintain an updated status of the engine so that the overall reliability of the motor home can be maintained.

As an aid to extracting and/or installing fuses in the fuse blocks, one may wish to buy an inexpensive fuse puller at any electronics or hardware store. This tool makes the installation or removal of fuses much easier and prevents inadvertent damage to nearby fuses or the fuse block itself.

Whenever a fuse has been "blown" and is to be extracted and replaced, it is good practice to examine the wiring going to that particular fuse to see if there is any noticeable degradation (e.g., wiring insulation nicked, missing, or melted) which may indicate damage beyond the fusing proper.

Warning

Never replace a fuse with a fuse rated larger than that which originally came from the factory. To do otherwise will cause serious damage, overheating of the wiring, and possible ignition of nearby materials resulting in a fire.

Seven-Pin Towing Connector

Your Allegro RED is equipped with a standard, 7-pin connector near the towing hitch at the rear of the motor home to supply the necessary circuitry to control a towed vehicle. The wiring of that connector is shown in the accompanying diagram (see Figure 7-16).

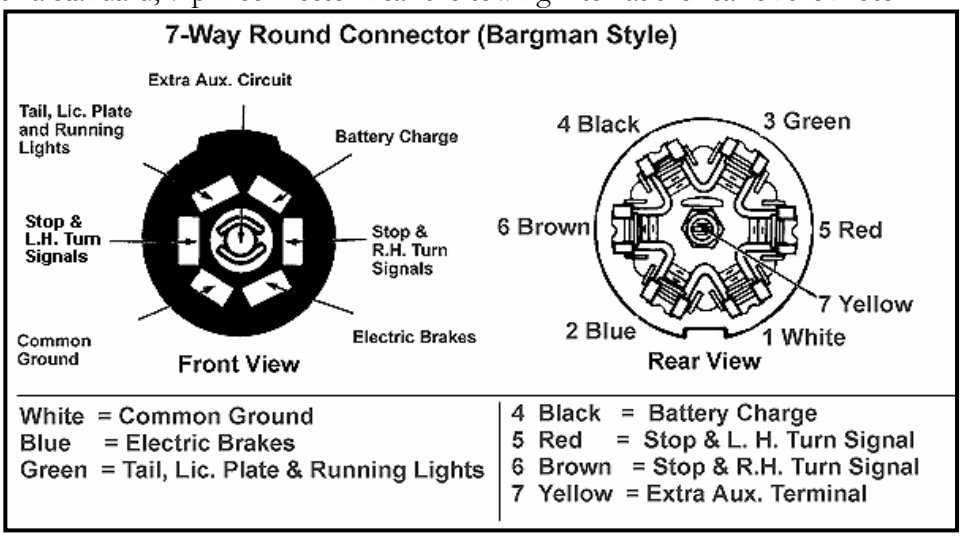


Figure 7-16. Seven-Pin Towing Connector

Make sure that any cable from the vehicle to be towed is wired correctly to mate properly with the connections shown in the connector. If in doubt about proper wiring, have a qualified service technician prepare and install the necessary cable to mate with the 7-pin connector on the motor home to assure proper operation subsequently when any vehicle is actually towed by the motor home.

When the towed vehicle is uncoupled from the motor home and the cable is disconnected from the 7-pin connector, be sure to close the spring-hinged cover plate on the connector to protect the contact pins from dirt or debris. In a similar manner, protect the cable end from similar damage, weather, or debris—one such method could be to place the connector end in a heavy-gauge plastic bag (e.g., polypropylene, polyethylene, etc.) and secure the bag tightly around the cable with a stout elastic band or tape and then mount the secured cable in a manner to keep it both from mechanical damage and water intrusion.

When the towed vehicle is again coupled to the motor home via the towing hitch and the cable is again connected to the 7-pin connector, make sure the resultant connection is tight and solid so that the connection won't jar loose during use. Several supplemental methods to secure that connection have been used; some of which include securing the connection with a strong rubber band or with Velcro-type fasteners to provide a supplemental mechanical backup to the actual electromechanical connection.

Should a conversion adapter to convert the round, seven-pin connector to a flat, four-pin connector be needed; such an adapter may be purchased from any RV after-market store.

Chapter

8

Slide-Out Features

SLIDE-OUT OVERVIEW

Warning

BEFORE ACTIVATING THE SLIDE-OUT FEATURES, please read the slide-out room instruction manual first. Additionally, the motor home must be parked and the leveling jacks must be used to level the motor home PRIOR to activating the slide-out features and the ignition switch must be in the "off" position.

General Considerations

Please Note

The Slide-Out Room requires semi-annual inspection (i.e., every six months) to assure that the slide-out mechanism is properly aligned and functioning correctly. Please make sure that this inspection is performed every six months to correct any possible misalignments.

The slide-out-room feature is actuated by means of a readily-accessible, rocker switch (Figure 8-1). The rocker switch must be manually held down in the desired position (i.e., either "in" or "out") to activate the desired action of the slide-out room and continue to be held down until the desired action is concluded.

Figure 8-1. Slide-Out Switches

Releasing the rocker switch before the slide-out is fully extended or retracted will stop the slide-out at some intermediate position. **NOTE: The slide-out switch will only operate when the ignition switch is in the "on" position and the park brake is engaged**—there is an interlock which keeps the slide-out mechanism from operating when the ignition is "on."

Operating Precautions

Before the slide-out-room mechanism is to be used, make sure that the motor home is parked, the leveling process has been properly completed. Verify that no obstacles (e.g., branches, trees, telephone poles, power/water hookups, trash bins, and the like) are within a five-foot space envelope of that slide-out room to preclude damaging the slide-out room when it is finally deployed.

Warning

Before attempting to extend the slide-out room, check outside and make sure that there is at least a five-foot clearance around the area where the slide-out room will be extended.

Extending the Slide-Out Room

1. All windows in the slide-out room (Figure 8-2) must be closed and secured before the slide-out room is to be extended or retracted. Also any loose materials or possible obstructions should be removed from the immediate, slide-out room area.

   Make sure that the motor home has been leveled, that the battery is fully charged and connected to the electrical system, and that the ignition switch is "on" and the engine is running before attempting to use the slide-out features.

Figure 8-2. Typical Slide-Out Fully Extended

2. Verify that there are no obstructions outside which may interfere with the operation of the slide-out room.
3. Prior to moving the slide-out room in either direction, make sure that the driver's chair is moved forward into the driving area as far as possible and is locked into position.
4. Push the "out" section of the rocker switch; allow the slide-out room to go to its fully extended position.
5. Release the rocker switch (this locks the room into position).

Retracting the Slide-Out Room

1. Before attempting to move the motor home, the slide-out room must be fully retracted.
2. Verify that the 12 VDC system is fully charged and connected to the electrical system.
3. Push the "in" section of the rocker switch; allow the slide-out room to go to its fully retracted position.
4. Release the rocker switch (this locks the room into position).

Please Note

If the slide-out room doesn't move when the rocker switch is depressed, check the following:

Make sure the ignition system is turned "on."

Make sure the park brake is engaged.

Make sure the battery is fully charged and connected.

Make sure the slide-out breakers haven't been "tripped." These are located in the storage box with the inverter or converter.

Chapter

9

Exterior Features

Towing Hitch

On the rear of the Allegro RED can be found a Class 3, 10,000-pound towing hitch (Figure 9-1) capable of handling a tongue weight of 1,000 pounds. This hitch is installed for towing a passenger car to be used when the vehicle is parked. The wire connector installed with this hitch is a standard, seven-pin connector. For more information on the connector, please see Chapter 7 of this Owner's Manual.

Figure 9-1. Towing Hitch

Exterior Sides

The sides (Figure 9-2) of your Allegro RED are constructed of gel-coated fiberglass. To add to this feature, the end caps are also gel-coated fiberglass. To clean these fiberglass surfaces, only use warm water and a mild cleanser; gently wash with soft cloths. Use of stiff bristle brushes or other harsh abrasives may cause scratches in the fiberglass surfaces. Please note: Tiffin Motorhomes is NOT responsible for the weathering/oxidation of gel-coated surfaces.

Figure 9-2. Motor Home Exterior

Lighted storage compartments are located on the exterior sides of your Allegro RED. These external compartments provide ample, additional space for your belongings while you are traveling. When stowing materials in these storage compartments, try to "balance" the resultant weight load from front to rear and from side to side—this will keep the center of gravity of the motor home essentially unchanged and should not adversely affect the handling characteristics of the motor home when it is in motion.

Security Lights

On the Allegro RED, exterior security lights (Figure 9-3) are standard features. A light is installed on the passenger side of the coach to help light that side of the Allegro RED for added protection. This light can serve as a "porch light" when the motor home is parked and the awning is deployed so that various activities (e.g., sitting outside, grilling, visiting) at dusk and later can be enjoyed by the motor-home owners and their guests.

Figure 9-3. Security Light

Roof & Ladder

The Allegro RED is manufactured with a fiberglass roof accessed by a ladder (Figure 9-4). Proper care and routine maintenance of your roof will assure many years of trouble-free performance. Please see Chapter 14 for details on recommended cleaning instructions. On the Allegro RED, a roof ladder (rated capacity: 200 pounds, maximum) may also be included as an additional feature. The ladder is typically used to permit easy access to the

Figure 9-4. Roof Ladder

roof for routine maintenance and periodic inspections. The ladder is hinged so that its lower half can be folded up onto the upper half when the motor home is in transit. When folding up that ladder and securing it, be sure that the ball-lock pin is securely fastened through the locking device to secure the ladder.

Warning

Do not exceed the maximum rating of the ladder (i.e., 200-pound load limit).

Do not attempt to walk on the roof either while it is wet or when condensation is present from the air-conditioning system, as that surface would be quite slippery.

Leveling Jacks (Hydraulic)

Warning

If the vehicle is equipped with a slide-out, DO NOT OPERATE any room extension until the leveling and stabilizing procedure has been properly completed. DO NOT RETRACT the leveling system until the slide-out room has been retracted. NEVER operate the leveling system when the slide-out is extended.

HYDRAULIC LEVELING SYSTEM

The Allegro RED will be equipped with hydraulic-leveling jacks. These jacks work in pairs: Front, right side, left side, and rear. Before extending these jacks, the engine must be "off," the ignition switch must be in the "ACC" position, and the transmission must be in "park." The parking brake needs to be set and the tires blocked securely; then the leveling jacks can be activated.

Caution

DO NOT LIFT the wheels of the motor home off the ground when leveling—if done, the motor home can tilt forwards or backwards when supported only by the leveling jacks. Never use the jacks to lift the motor home off the ground to change the tires or perform any under-chassis maintenance—these jacks are not meant for this type of

service and this misuse would be very dangerous to the operator.

HWH Leveling Control Panel

The HWH Computerized Leveling system (Figure 9-5) requires minimal effort from the motor-home user. For leveling of the motor home, perform the following steps:

Figure 9-5. HWH Computerized Leveling System

Manual Leveling (Standard):

1. Turn the ignition switch to the "acc" or "on" position. The engine must be "off" to level the coach. The transmission shift must be in position for parking. The park brake must be set either manually or automatically. If the "not in park/brake" light is "on," check or recheck the shift and brake position.

2. Press the "hyd" button. The "hydraulic operation" indicator light will turn "on" with a steady glow.

3. On the right-hand portion of the HWH Leveling Control touch panel, note the outline of the motor home and the various "raise" (i.e., "up" arrow and "lower" (i.e., "down" arrow) touch buttons.

4. Press the respective "raise" ("up" arrow) button to raise the respective side or end of the motor home. A yellow light to the front, side, or rear of the motor-home outline indicates that that side or end is low. The "lower" ("down" arrow) buttons will lower the motor home.

Automatic Leveling

1. Turn the ignition switch to the "acc" or "on" position. The engine must be "off" to level the coach. The transmission shift must be in position for parking. The park brake must be set either manually or automatically. If the "not in park/brake" light is "on," check or recheck the shift and brake position.

2. Press the "hyd" button twice—the motor home will automatically level itself.

NOTE: The hydraulic jacks will always work in pairs: Front end, right side, left side, or rear end. During transit of the motor home, the "Store" position on the HWH Leveling Console must be engaged.

Electric Steps

The Allegro RED is equipped with electric door steps (Figure 9-6). As such, the switch (Figure 9-7) to operate these steps is located in the passenger console box. When the power switch for the steps is in the "on" position, simply open the door and the steps will automatically extend. Detailed operation for the electrical, double-entrance, door steps is as follows:

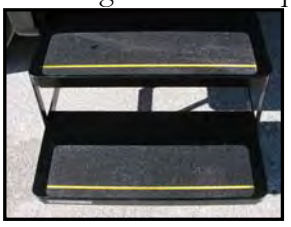


Figure 9-6. Electric Steps

Figure 9-7. Entrance Step Switch (right middle)

1. Turn the step power switch "on."

2. Close the door. The step should retract and lock into the UP position.

3. Open the door. The step should extend and lock into the DOWN position.

4. Turn the step power switch "off." The step should remain in an extended position when the door is closed. Turning "off" the power with the step retracted will hold the step in a retracted position, as well.

5. With the step extended, turn the step power switch "off" and close the entrance door. Turn the vehicle ignition switch "on." The ignition override system will go into effect and the step will automatically retract.

Caution

If the motor home is driven with the step in the extended position, there is the possibility of causing major damage to both the step and the motor home.

6. With the step switch in the "on" position, turn the vehicle ignition switch "off" and open the door. The step will extend and lock in the DOWN position.

Caution

If the door is opened and closed without allowing the step to extend fully and lock in the "DOWN" position, the step will retract and lock in the "UP" position. When the door is re-opened, the step will not extend. The power switch must be turned "on" for the step to extend.

7. This feature is only operative the first time the door is opened after the vehicle ignition switch is turned "off." When the ignition switch is "on," the step will always activate with the door movement, regardless of the position of the step power switch.

Caution

Always be sure to "look before you leap"! When opening the entrance door from the inside, be sure that the step has fully deployed before trying to step outside to avoid falling and possible injury.

When the electric steps are fully retracted and the motor home is being made ready for travel, be sure to remove the cover over the stairwell (Figure 9-9) by lifting it by the handle and the cover will fold. There is a hook type enclosure that the folded cover will securely fasten to when not in use.

Figure 9-8. Electric Steps Switch (Passenger's Side)

Figure 9-9. Stairwell Cover (Fully Deployed)

Other exterior features include optional power-assisted awnings (patio awning, door awning, or both). If such are available, they can be controlled from the switch console located in the stairwell of the Allegro RED (see Figure 9-8). Additionally, a patio light switch and a cargo light switch may be used to provide illumination on the patio side of the motor-home exterior and in the exterior storage compartment areas under the motor home, as needed.

Mirrors

This motor home is equipped with convex, remote-controlled, exterior, rear-view mirrors (Figure 9-10)—black are standard; chrome are optional. Always adjust the mirrors for maximum rear visibility prior to driving. If another driver is to drive, be sure the mirrors are readjusted to accommodate the second driver.

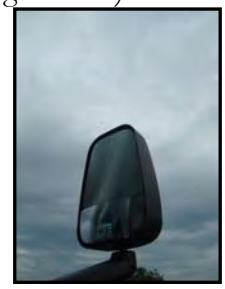


Figure 9-10. Mirror

These standard, black mirrors are adjusted by using the multi-directional switch located on the dashboard. Select the mirror to be adjusted by pointing the arrow in the direction of that mirror. Move the control in the direction of movement desired to obtain the best view for that mirror. The adjustment control moves the top half of both mirrors. The bottom half of each mirror is convex and is adjusted manually.

Detailed instructions for these manual adjustments can be found in the manufacturer's literature available in the Owner's Information Package. However, this brief overview of mirror adjustment can begin the process: The top portion of the mirror should be adjusted horizontally so that you can see your own motor home in the one-inch surface closest to the motor home; the remaining portion of the mirror now permits you to see the road behind you. The mirror should be adjusted vertically so that you can see the rear bumper on the bottom of the plane portion of the mirror.

The convex mirrors should be adjusted horizontally so that you can see your own motor home in 1/3 of the mirror. These convex mirrors should then be adjusted vertically to allow you to see any other vehicles alongside your motor home.

These mirrors also contain heating elements to defog or de-ice the mirror glass during cold weather operation. The "on/off" switch for this feature is located by the adjustment control. Further adjustment of the mirror may be necessary at the swivel portion of the mirror arm.

Important

Objects viewed in convex mirrors appear smaller and farther away than they actually are.

Chapter

10

Interior Features

Bedspread

As a furnished part of the bedroom suite, a bedspread with matching pillow accessories (Figure 10-1) is included with the Allegro RED motor home. For the bedspread and pillow shams, cleaning instructions are "for dry-cleaning only." As the bedspread was made with materials treated for stain resistance; dry-cleaning will prolong the life of these materials. The curtains in the bedroom are color-coordinated with the bedspread and accessories to provide a pleasing décor for the bedroom area.

Figure 10-1. Bedroom Decor

Flooring

The living room and bedroom floor areas are carpeted with filament-nylon carpeting treated with Scotchgard, a stain-resistant coating. In the Owner's Information Package, there is additional literature from the manufacturer concerning the specifics of caring for the carpeting which, if followed, will prolong the appearance and life of the carpeting. Please become familiar with the recommended care and cleaning of the carpeting to assure its prolonged life.

Figure 10-2. Typical Flooring

Vinyl flooring (Figure 10-2) is standard in the kitchen and bathroom areas of the motor home. For routine cleaning, sweeping or vacuuming the floor would be sufficient. If more thorough cleaning is warranted, the flooring can be cleaned with a damp mop and water. For more stubborn stains, a mixture of soap-free household cleaner (e.g., vinegar, ammonia, or comparable products) and water can be used to advantage.

One should not unduly saturate the floor surfaces with water, as this could damage the flooring substrate. Do not use any abrasives (cleansers, scouring pads; and the like) as they can scratch or mar the vinyl flooring surfaces and may cause damage to the vinyl flooring. If ceramic tile is chosen as an option, it may be cleaned more vigorously than would be the vinyl flooring.

Ceiling

The ceiling (Figure 10-3) in the Allegro RED motor home is covered with a padded-vinyl headliner which can be easily cleaned with a damp, soft cloth and a mild detergent. Take care to clean around any vent areas to prevent any build-up of dirt, grease, or other accumulations.

Figure 10-3. Vinyl Ceiling of Allegro RED

Window Treatments

Throughout the Allegro RED, the window treatments consist of two shades—solar and blackout (Figure 10-4).

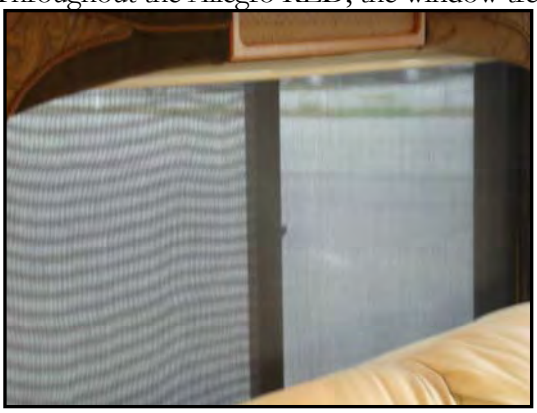


Figure 10-4. Day / Night Window Shades

The solar shade allows one to see out during the daytime yet blocks most of the sunlight and heat from entering the motor home. The blackout shade creates complete privacy for nighttime.

Each shade is installed on a manual roller that is operated with a chain. There is a separate chain for the solar and blackout shades; you will need to use the specific one for the shade you desire to operate. Pulling the chain will raise or lower the solar or blackout shade, whichever is desired.

The chain driven shades are located on all the windows in the living area and bedroom. A single white chain shade is located in the window above the kitchen sink and the bathrooms.

The cockpit shades operate on a manual roller tube with a retention spring. **CAUTION:** DO NOT overextend the shade; this will damage the roller tube. To operate the cockpit shades, pull the shade down to the desired level and slowly release to lock the shade in place. To retract, gently pull down on the shade and release.

Chapter

11

Plumbing & Bath Fixtures

FRESHWATER SYSTEM

Monitor Panel

The monitor panel (Figure 11-1) permits checking the approximate levels in the fresh, gray, and black water holding tanks; the LP-gas level; and the condition of the battery. The monitor panel is generally located in an overhead cabinet above the driver's seat. To use this monitor, simply press the "level test" button to read the fresh, gray, and black water tanks and the present condition of the batteries.

The "empty" indicator light will momentarily light when the button is pressed. If the tank is full, all of the lights will be "on." Lights are sequentially arranged to indicate fluid levels in approximately third-tank increments. For example: if the tank selected is approximately two-thirds full, then the indicator lights "E" (for "empty"), "1/3", and "2/3" will be lit.

Figure 11-1. Monitor Panel

Kitchen Sink

The kitchen sink (Figure 11-2) installed is a multi-functional, double-bowl sink equipped with two sink covers to provide additional counter space when the sink is not in use. For the sink, cleaning care consists of washing only with mild detergents and water and using a soft cloth for subsequent drying and polishing. The faucet in the kitchen may be a single-handle faucet.

Figure 11-2. Kitchen Sink

Bath Sink, Shower & Accessories

The sinks (Figure 11-3) in the bathroom and the bedroom are a solid, continuous surface. When cleaning this surface, use care to prevent scratching or marring it. The typical bathroom accessories include a towel bar and a tissue holder.

Figure 11-3. Bedroom Sink

The single-handled faucet in the bathroom was chosen to match the specified decor. The bathing facilities installed may be a fiberglass shower (Figure 11-4) or combination shower/tub with a glass shower door. The tub faucet with showerhead,

Figure 11-4. Shower

hose, and bracket are coordinated with the sink faucet.

Water Pump

The water pump is self-priming and totally automatic, operating on demand whenever water is required. The water pump is used to pressurize the freshwater system when the unit is not connected to city water. The switches (Figure 11-5) to this pump may be located in the bathroom, galley, or sanitation-service compartment. To start the pump, follow these instructions:

Figure 11-5. Water Pump Switch

1. Fill or partially fill the fresh water supply tank.
2. Open the kitchen and bathroom faucets.
3. Turn the water pump switch "on" and allow the water to fill the water line and the hot water heater.
4. Close each faucet after it delivers a steady stream of water (close the cold-water faucet first). Leave the hot-water faucets "on" until they also deliver a steady stream of water. This procedure will assure that the water heater is filled with water.
5. The water pump should stop running once all faucets are closed.
6. The water pump is now ready for automatic operation. The pump will run when a faucet is open and stop when a faucet is closed.
7. Never allow the pump to run for long periods of time without water being present in the supply tank, as doing so may cause physical damage or blow fuses.

If water does not flow when a faucet is turned "on" while using the demand system, use the following troubleshooting chart:

SITUATION	SOLUTION
Pump running – no water	1. Fill tank. 2. Clear the water line to the pump.
Pump doesn't run	1. Check the pump switch 2. Check the 12-volt fuses 3. Check the electrical connections 4. Check the battery.

All of the water should be drained from the freshwater system when the unit is not in use for extended periods. For more detailed information regarding the water pump, one should refer to the water-pump manufacturer's brochure in your Allegro RED Owner's Information Package.

City Water Connection

When connecting your unit to city water, be certain to use the water hose manufactured and labeled for potable water service—this will assure that the hose selected for use will not alter the taste of the water (Figure 11-6). To connect the city water supply to the vehicle, connect one end of the hose to the city water supply; this connection will usually be to a faucet or valve similar to your garden hose valve at home.

Figure 11-6. City Water Inlet

Figure 11-7. City Water Supply Connection

Turn the city water supply "on" for a few seconds to clear the line. Once the hose has been flushed, turn the supply "off." Connect the other end of the hose to the city-water connections on the motor home. Once the city water fill valve (Figure 11-7) is opened, water is supplied to the freshwater system including the hot water heater, faucets, and toilet. Turn "on" the water supply and open all of the faucets to clear any trapped air within the plumbing lines within the motor home.

Once any air pockets have purged from the water lines and water flows freely, close all of the faucets. The city water supply is pressurized; therefore, the water pump is not needed when the water system of the vehicle is connected to the city water system.

To disconnect from the city water supply on the motor home, close the valve and remove the hose from the city water supply. Disconnect the hose from the city water connection and store the hose in the water compartment.

Filling the Freshwater Tank

The freshwater tank is normally filled from the city water connection. The valve located in the service compartment near the water connection determines whether the city water is going through the water system or into the freshwater tank. Since there is not an automatic shut-off when filling the freshwater tank, check the level from the monitor panel while filling the freshwater tank on the motor home.

The excess water will be vented from an overflow in vent pipe onto the ground when the capacity of that tank has been reached. This pipe is installed in the freshwater tank to prevent possible tank rupture from inadvertent overfilling.

All of the water should be drained from the freshwater system when the motor home is not in use for an extended period of time.

Sanitizing

To assure complete disinfecting of the freshwater system, it is recommended that the following procedure be performed on a new system, on one that has not been used for a length of time, or one that may have become contaminated. This procedure is also recommended before long periods of storage, such as during the winter months:

1. Drain the freshwater tank by opening the drain valve. All of the faucets should be in the closed or "off" position.

2. Prepare a chlorine solution using one gallon of water and one-half cup of chlorine bleach (5% sodium-hypochlorite solution). Prepare enough of the chlorine solution to administer one gallon of solution for every 15 gallons of tank capacity. For sanitizing this unit, prepare 4½ gallons of the chlorine solution. This mixture puts a 50 ppm (parts per million) residual chlorine concentration in the water system that will act as a quick-kill dosage for harmful bacteria, viruses, and slime-forming organisms. Concentrations greater than 50 ppm may damage the water lines and/or the tank.

3. Once the freshwater tank is empty, close the drain valves in the water tank.

4. Pump the chlorine solution into the tank by taking the hose attachment and attaching it to the pump and then put in the chlorine solution. Close the valve from the fresh water tank to the pump and open the valve from the solution to the pump. Turn the tank fill valve from "city water" to "tank fill." Turn "on" the water pump until all of the solution is pumped into the fresh water tank.

5. Turn "off" the water pump. Open the valve from the tank to the water pump. Fill the water tank with the city water tank fill (or by using the same method as was used to put the sanitizing solution into the tank). Remove the water filter (from the drink dispenser faucet, if installed). Open each faucet, in turn, including the kitchen faucet, bath faucet, inside and outside showers, turning "on" both the hot and cold faucets and flushing the toilet until all of the air has been purged from the pipes and the water runs freely. The entire system will then be filled with the sanitizing solution.

6. Allow the 50 ppm disinfecting solution to stand in the system at least four hours.

7. Drain the system and flush it with freshwater. The water system needs to be flushed with water repeatedly, if necessary, until there is no chlorine taste or smell left in the system. To remove any excessive chlorine taste or odor that might remain, prepare a solution of one quart of vinegar to five gallons of water. "Rock" the tank containing the solution by moving the vehicle forward and backward several times to clean the tank; then drain that tank and refill with clean water.

Water Filter (*Optional*)

This unit is equipped with a water filter (Figure 11-8) which must be removed before disinfecting the fresh-water system. First remove the water filter and then replace cover to allow the sanitizing solution access to the faucets. As installed, the filter will remove chlorine, dirt, and other matter. The filter will also eliminate most phenol (or similar) odors and tastes while delivering sparkling, taste-free water for drinking and cooking.

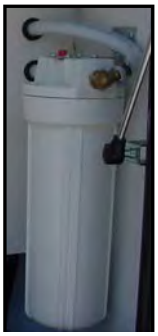


Figure 11-8. Water Filter

The water filter is located in the sanitation compartment on the outside of the motor home. The water filter is not guaranteed to remove the tastes and odors of iron and sulfur. To remove these impurities, one would need to chlorinate the water. Replacement filters are available that will filter iron and sulfur. Ask your dealer or RV supply center about purchasing an iron and sulfur filter, if such is desired.

If you are traveling in an area where the water has a high iron and sulfur content, then add one tablespoon of chlorine bleach to every 10 gallons of water in your tank—this will precipitate the iron or sulfur so that the filter can remove those impurities.

If you are at a site where the unit is connected to a city water supply, you will not be able to chlorinate the system because the water flows straight to your faucets and not through the freshwater tank. Filters should be changed every 6-12 months depending on the quality and quantity of water that is used in your motor home.

Water Heater Bypass System

The water heater bypass valve (Figure 11-9) is located in an outside compartment near the water heater. This process is performed when winterizing your motor home. Using the bypass valve will keep antifreeze out of the water heater when winterizing the motor home.

Draining the water heater during winterizing is a MUST.

Figure 11-9. Water Heater Bypass System

Freshwater Lines

Vibration and flexing encountered when the motor home is traveling can cause pipes and fittings to become loose. Check all of the plumbing connections for leaks at least on an annual basis. If the water pump runs when all faucets are turned "off," check for a possible leak. Be sure that the drain valves are closed.

Connections at the kitchen and bathroom faucets normally seal by hand-tightening them and then making an additional half-turn with a wrench.

If a fitting leak persists, disconnect it completely and visually inspect it for mineral deposits or foreign material stuck on the sealing surfaces. Clean the surfaces thoroughly and reinstall the fitting. Take the motor home to an authorized Tiffin Motorhomes service center for additional repairs if the water system continues to leak. Follow the winterizing instructions given in Chapter 14 to reduce risk of leaks caused by cracks from freezing pipes. Left unchecked, freezing damage can be extensive and expensive.

WASTEWATER SYSTEMS

General Information

The waste drainage system was designed to provide adequate and safe storage and/or disposal of waste materials. All of the materials used in the fabrication of this system are tested by a nationally recognized testing laboratory. The drainage system uses plastic piping and fittings connected to the sinks, toilet, and holding tanks.

This plumbing permits the drainage of these fixtures to an outside termination. The vehicle should be reasonably level for best operation of both of the wastewater systems (there are two, separate wastewater systems). The gray-water system is for wastewater from the sinks and shower. The black-water system is for sewage waste from the toilet. Each wastewater tank has its own control valve and both drain through a common sewer-drain hose.

Toilet

The toilet (Figure 11-10) in your motor home may be a china toilet equipped with a spray attachment. The toilet operates with water from either the fresh water tank with the water pump "on" or the city water supply. Before using the toilet, add water to the bottom of the tank. Refer to the "BLACK WATER TANK" instructions elsewhere in this chapter.

Figure 11-10. Toilet

The toilet flushes waste directly into the black-water holding tank. The toilet uses high-velocity water injection to produce swirl effect in the bowl. The greatest problem that causes stool solids to accumulate in the holding tank is lack of liquids. It is imperative that you use as much water as possible when flushing to prevent tissue and other solids from clogging the holding tank outlet.

When using your toilet, it is wise to fill the toilet ¾ full of water—this will help wash the solids away from directly below the toilet and to assure complete dumping of the holding tank. To add water to the toilet bowl, lift or raise the flush lever until the desired water level is reached. To flush the toilet, push down on the lever until the water swirls. A small amount of water should remain in the bowl.

The toilet should be cleaned regularly for maximum sanitation and operational efficiency. Clean the toilet bowl with a mild bathroom cleaner. **DO NOT USE CHLORINE OR CAUSTIC CHEMICALS, SUCH AS LAUNDRY BLEACH OR DRAIN-OPENING TYPES, AS THEY WILL DAMAGE THE SEALS IN THE TOILET AND DUMP VALVES**.

Refer to the toilet-manufacturer's owner's manual in your Allegro RED Owner's Information Package for complete instructions and a detailed troubleshooting guide.

P-Traps

Each of the sink drains, the shower drain, and the washing-machine drain (if so equipped) has a water trap (P-trap) to prevent holding-tank odors from entering the vehicle. These traps must have water in them to trap odors. When the vehicle is in motion, the water may splash out of the sink and shower drains. When the vehicle is stored, the water may evaporate from these traps allowing odors to enter the vehicle. If this occurs, run water from the faucet into the drain, thus allowing water to fill the traps again.

Black-Water Holding Tank

The "black water" (i.e., sewage) holding tank is located directly beneath the toilet. Before using the toilet, you will need to treat the tank with water that is mixed with an odor-controlling chemical. These chemicals are readily available at any RV supply store. Be careful not to spill the chemicals on your hands, clothing, or the carpet because such may cause a permanent stain. Pull the toilet levers forward to allow the chemicals to mix with the toilet water. Continue pulling the toilet levers until a depth of at least one inch of solution is directly under the toilet. Release the levers and the waste tank is now ready for use.

Caution

Use only approved RV odor-controlling chemicals in the holding tanks. Products containing ammonia and petroleum will damage the ABS plastic holding tanks and seals.

Caution

It is important that you use as much water as possible with each flush. This will help prevent tissue and other solids from clogging the holding tank outlet.

Gray-Water Holding Tank

The gray-water holding tank is located in the underbelly of the vehicle. It is primarily used for the drainage from the kitchen and bath sinks and the shower.

Wastewater Disposal

Both of the holding tanks terminate in a valve arrangement that permits draining each tank separately or together. It is recommended to drain the black-water tank first before draining the gray-water tank. This procedure permits the water from the gray tank to wash the black-water residue from the drain lines and hose found in the external sanitation compartment. The valves that open to release the water are called gate valves. The blade that closed the opening in the sewer drainpipes is connected to the T-handle to release contents of the tank(s) when pulled. The sewer line must be securely capped during self-containment use to prevent leakage of waste materials onto the ground or pavement. Do not pull the holding tank gate valve "open" when the protective cap is installed on the pipe. Always drain the tank into an acceptable sewer inlet or dump station. Whenever possible, drain both the holding tanks prior to traveling. The carrying capacity of your vehicle will be reduced if water is left in the black or gray tanks.

The holding tanks should only be drained when they are at least ¾ full. Doing this will provide a sufficient volume of water to allow the complete flushing of waste materials in the drain lines and hose. If the tanks are not ¾ full, add enough water to allow for sufficient flushing.

To empty the wastewater tanks, connect the adapter, supplied with your vehicle, to the drain hose (Figure 11-11). If the adapter is lost or broken, another one can readily be purchased from any RV supply store. Once you have placed the adapter on the drain hose, it can remain there for the life of the hose. One end of the hose threads up through the hole in the bottom of the service compartment and the other end of the hose feeds into the sewer at the dump station.

Figure 11-11. Sanitation Coupling, Valve, and Hose

Unscrew the cap from the drain. Connect the hose, with the adapter in place, to the drain fitting. Open the gate valve completely by pulling on the T-handle. The tank will start to drain as soon as the T-handle is pulled. After you have drained the black-water tank, immediately drain the gray-water tank. This procedure helps to flush the black water from the sewage hose.

When both of the tanks are empty, flush them with a freshwater rinse before you close the valves. The gray tanks are easily flushed by pouring a couple of gallons of water into a sink drain. The drain outlet is engineered for quick release of the drain hose adapter. Always close the gate valves and secure the end cap to prevent leakage while the vehicle is in transit.

After draining the black-water tank, it is recommended to add a holding-tank deodorant to help control the odor and break down the solids. Follow the instructions given on the holding-tank deodorant package.

When using dump stations for draining the holding tanks, keep other travelers in mind. Please practice good housekeeping! Leave the dump stations in good order. Above all, **do not pollute**!

Sewer Connection and Camping

When camping at parks with sewer connections, it is important to keep the black-water, holding-tank, gate valve closed at all times, except when dumping. The gray tank can be kept open while hooked to a sewer connection, but again, the black-water tank must be kept closed. This is done so that an ample quantity of liquid remains in the tank to provide a smooth flow through the gate and drain valves when dumping. Sufficient liquid in the tank causes a swirling action that should take any accumulated solid wastes with it. Accumulation of solid wastes in the black-water tank can be avoided by keeping the gate valve closed when connected to the sewer connection. If the valve is open, solid wastes may accumulate in the tank which may eventually result in costly repairs.

Caution

The gray-water tank valve must be in the "open" position when operating the optional washing machine.

No-Fuss Flush

This vehicle may be equipped with a flushing system for the black-water holding tank. When draining your sewer tank, attach a water hose to the sewer spray connection. After the tank is drained, leave the gate valve "open" and open the water valve to allow water to spray inside the black-water tank; this will clean the inside of the tank of any debris that may be left inside the tank. After this procedure is done, disconnect the freshwater hose and close the gate valve.

Caution

Be sure the gate valve is "open" when flushing the tank. Do not use the same hose for the No Fuss Flush that is used for filling the fresh water tank.

Exterior Shower

Your Allegro RED has an exterior shower (Figure 11-12) for your use and convenience outside the motor home. The exterior shower is located in the service compartment, which is located on the driver's side of the motor home. The exterior shower feature allows you to do such things as rinse off sand or grass, muddy shoes, or bathe yourself outside of your motor home. The faucet operates just as it would in your kitchen or bathroom. In addition to the shower itself, there is also a soap dispenser conveniently situated in that same compartment and a light to permit use under low-light conditions.

Figure 11-12. Exterior Shower and Exterior Light

Chapter

12

Windows, Awnings, Vents, & Doors

Windows

The windows (Figure 12-1) on the Allegro RED are of the sliding type. Double-pane windows provide additional thermal control (i.e., insulation) to maintain interior temperatures better. In the double-pane windows, a "dead air" space (filled with a dry, inert gas) is sealed between two panes of glass—this "dead air" space provides additional thermal insulation for the windows and prevents them from fogging internally.

Figure 12-1. Windows on the Allegro RED

Additionally, there may be a reflective coating on the windows to reflect back a portion of the sunlight to reduce the heating of the motor-home interior and to reduce the effects of the sun's "bleaching" of interior fabrics (curtains, upholstery).

For both the driver's and passenger's windows, additional sun shades are available to permit blockage of the sun's rays which may interfere with driving. These shades can be deployed, as needed, and then moved out of the way when no longer desired.

In the bedroom, one particular window will be marked with an "EXIT" label—this is an emergency escape (Figure 12-2) only to be used when normal exits are blocked or inaccessible. To use this emergency escape, merely lift the red handles at the bottom of the window and push outwards to open the window.

Figure 12-2. Bedroom Emergency Exit Window

Should it be necessary to use this exit, please look for a secure footing, both inside and outside, when exiting so that no personal injury is sustained in the process. It is also prudent, when parking the motor home, to be aware of where this "emergency-exit" window will be situated so that it is not inadvertently blocked or impeded from its normal, intended operation, should the use of such become necessary.

Awning

The power patio awning (Figure 12-3) is standard on the Allegro. The power patio awning is extremely durable and can be operated during light rain and wind conditions. However, when periods of heavy rain, or wind is expected; or you leave the awning unattended the awning should be closed. Please note that damage caused by wind and rain is not covered by warranty. To operate the awning follow the instructions listed below.

Figure 12-3. Power Patio Awning (Fully Extended)

To open the awning:

1. Rocker Remote Switch

    A. Press and hold the "Extend" button and the awning will automatically open. If the button is released the awning will stop. Maintain button depressed until awning is fully extended then release.

    B. Verify that the valance is in the correct orientation (see awning instructions found in Owner's Information Package, page 2 Figure 1). Tap the rocker switch in the "Retract" direction to adjust the valance orientation if necessary. Allowing the valance to remain in the hyper-extended orientation may create a propensity to pool water, especially in larger (17'-21') awnings.

To close the awning:

NOTE: Pinch Hazard. When closing awning, bottom arm will fold down and against back channel. This area must be kept clear of people and objects. Failure to heed this warning could cause severe personal injury and/or property damage.

1. Remote Rocker Switch

    A. Press and hold the "Retract" button to automatically close awning. If the button is released the awning will stop. Maintain button depressed until awning is fully retracted, then release.

IMPORTANT: As an extra safety precaution, visually verify that the awning is fully closed.

To adjust the awning pitch:

NOTE: Pinch Hazard. When adjusting awning pitch, bottom arm will telescope. Keep hands and objects clear of openings around bottom arm. Failure to heed this warning could cause personal injury.

1. With awning fully extended, loosen knob on bottom arm.
2. Pull top arm down to lower roller tube to desired height.
3. While holding top arm in place, tighten knob to set pitch.
4. Repeat for hardware on other side.

IMPORTANT: To ensure rain water will run off awning, ensure that one end of the awning is lower than the other end. This will reduce the potential for water pooling in the center of the awning.

5. Prior to closing awning, loosen knob to allow awning to reset to original position. Lightly tighten knob to reduce potential for sounds of rattling during travel.

In case of awning power failure or to manually close awning:

IMPORTANT: This procedure will require two people. When this procedure has been performed, the awning must be serviced by a Dometic service center or a qualified service technician before using again.

There are two methods of rolling up the awning if it appears there is no power to the awning motor. The following method should be performed first:

1. When the power awning hardware is in the open position and the 12 VDC power has been lost the awning can be closed by supplying auxiliary power to the hardware. Connect the awning motor to an external 12 VDC power source via user-supplied wire (16 gauge minimum). A good external 12 VDC power source would be an automobile battery.

2. Locate and unplug the motor and hardware cable connection located in the upper part of the right-hand arm.

3. Connect the user-supplied wire leads to the terminals in the connector from the motor. Electrical tape may be required to keep the wire leads in place. (Do not connect to the one in the hardware).

4. Connect the other end to a 12 VDC battery source. The red wire goes to + and the black to -. If there is not a problem with the awning motor, this will retract the awning. To avoid motor damage disconnect battery source immediately after awning is fully retracted.

5. The awning can be extended by reversing the polarity. Place the red wire on the – and the black wire on the +. Disconnect battery source after awning is fully extended.

If the awning will not retract after performing the steps listed above, perform the following steps.

1. Slide the pull strap (provided) into the utility slot of the FRTA (see awning instructions found in Owner's Information Package, page 4 Figure 6).

2. While one person is holding onto the pull strap, remove the screw in the top of the right top casting. The FRTA will immediately roll in once the bolt is removed. Walk the awning to the closed position.

3. Align hole where screw was removed and replace screw into top casting to secure awning. **NOTE:** The screw removed from top of right casting has to be reinstalled. This is to prevent awning from opening during travel, personal injury or damage can occur. Have the awning serviced by a Dometic Service Center or a qualified service technician before attempting to open awning after this procedure has been performed.

For additional operating and maintenance instructions, please refer to the Awning Owner's Manual found in the Owner's Information Package.

Caution

Since damage resulting from weather is not under warranty, anytime a heavy or prolonged rain or blustery winds are anticipated, it would be advisable to close the awning. Similarly, if the awning is to be left unattended for any prolonged length of time, it would be prudent to close that awning.

NOTE: Be sure that the awning is fully locked into position on both arms before travel. Failure to do so may cause the awning to deploy when the motor home is in motion.

Vents

The kitchen has a 12-VDC Fantastic vent fan (Figure 12-4) installed to exhaust kitchen odors. For normal operation, the vent is controlled by a thermostat mounted on the vent.

Figure 12-4. Vent Fan

Once the vent power switch is in the "on" position and the thermostat is set to a particular temperature, the vent fan will operate until the temperature set-point is reached; at which time the vent fan will automatically turn "off."

The vent fan should only be left in the "on" mode when the motor home is parked and in use.

If the motor home is to be unattended for long periods of time or is to be in storage, make sure that the vent fan is turned "off." Were the fan left "on," blustery winds or severe storms may prevent the vent from closing and, consequently, may permit leakage, with possible damage, into the motor home.

The bathroom also contains a 12-VDC, vent fan which is controlled by an "on/off" switch mounted on the bathroom wall.

Doors

Caution

Always secure the dead bolt lock while the motor home is in motion to prevent accidental opening of the entrance door.

The primary entrance door (Figure 12-5) to the motor home is a radius door having a key lock and a dead bolt for additional security. When the door is fully opened, the door hinge automatically holds the door in an "open" position

There is also a screen door associated with the entrance door; the screen door will permit increased air circulation when the entrance door is open. To enjoy this benefit, the screen door is operated independently of the entrance door.

However, when one wishes to close the screen door and the entrance door at the same time; the screen door latch must be fastened to the entrance door prior to closing the entrance door. Failure to do so will cause the screen door latch to be bent.

Figure 12-5. Entrance Door

Chapter

13

Routine Maintenance

EXTERIOR CARE

Important

Damage caused by improperly performed maintenance or inadequate maintenance is not covered by your Tiffin Motorhomes Limited Warranty.

Washing

Since 2003, Volatile Organic Compound regulations (formulated by EPA) prohibit the use of lead in paint. Lead made paint quite hard to prevent oxidation. Since 2003, paint manufacturing companies have had to find a new base for their paints. The paint on your Tiffin motor home has a polyurethane base called Diamont. While multiple layers of clear coat sealants protect the paint against oxidation, the sealant must be protected from deterioration or the paint will oxidize faster than the lead based paints of prior years.

Figure 13-1. Typical Motor Home Exterior

Paint manufacturers advise against using harsh cleaners such as Simple Green, Mr. Clean, or liquid dish washing soaps. The degreasing agents in these cleaners leave a residue on the sealant, which soften and damage the clear coat in time. It's akin to the sticky residue felt on a linoleum floor after cleaning the floor with any heavy duty, degreasing cleaner.

Baby shampoo provides an effective yet gentle cleaner. Without the typical heavy degreasers of most detergents, baby shampoo cleans without fear of leaving a residue to gum up the clear coat finish. Generally one ounce (1 oz.) is all you need per five gallon bucket of water. Also, add one-half to one cup of food grade distilled white vinegar to your wash bucket. If your water is soft, one-half cup is sufficient. Hard water requires a full cup per five gallon bucket.

Vinegar serves a two-fold purpose. First, it boosts the cleaning ability of the baby shampoo so you don't need as much. Second, food grade vinegar is made from grain and slightly acidic. The naturally occurring acid neutralizes the alkaline in the water to prevent water spots from forming. Make certain your jug of vinegar states "food grade" or "made for pickles," otherwise it may be made from petroleum.

Sliding manufacturers for years have recommended using 100% cotton pads like Sof Wash for washing. Since the introduction of the new lead free paints, lambswool, even softer than cotton, is now recommended. Tiffin Motorhomes uses the lambswool pad carried by Mary Moppins. It allows you to safely wash your coach from the ground.

Do not mistake lambswool with imitations. Imitation pads are made from 100% polyester, which is plastic. Plastic imitations will scratch the finish—but the scratches are so minute that they are barely noticeable at first. Eventually, continued scratching will remove the clear coat from the surface of your coach, vehicle, boat, floor, cabinets, and furniture. For this same reason avoid microfiber products to wash or dry your motor home, car, boat, airplane, motorcycle, vehicle, furniture, or cabinets. Microfiber is made from 80% polyester.

Likewise avoid washing with brushes. Even though you may not see brush marks now, the damage will happen as the bristles wear down. One washing and your coach is fine but the next washing leaves it covered with scratches. Use lambswool wash pads to avoid these issues.

Use only 100% cotton towels to dry your vehicle. Be cautious of terry towels made in Taiwan and China. They are not checked for fiber content as they enter the USA and usually contain up to 30% polyester.

Adding vinegar to your wash water and washing in the morning or evening will help prevent water spots. Water spots damage the exterior of your coach the same way they damage glass shower doors. They etch their way into the surface and removal becomes difficult. Prevention becomes the key. Wash one side at a time, rinse, and then dry quickly first using Mary Moppins EZE Squeegee followed by a towel placed over the Cleaning Head. Buff water spots immediately with a 1000 grit polishing compound or RenewzIt—a product by Mary Moppins which removes water spots, scratches and oxidation.

To remove oil and grease remember an important rule of cleaning: Give your product time to work. Dab a bit of concentrated cleaner like CleanEz by Mary Moppins—never an orange based cleaner or one with petroleum distillates—onto a soft cloth. Apply to the oil spot and wait 10 to 15 minutes before rubbing lightly to remove the oil. Rinse immediately.

Seals

The seals (Figure 13-2) around the doors, windows, vents, slide-out trim, and external seams should be checked at least semiannually. Additionally, the roof seams should be inspected for cracking or peeling semi- annually. If deterioration is noted during a routine maintenance inspection, reseal the seams or seals with an approved sealant to prevent leaks. Your Tiffin Motorhomes dealer can perform the resealing inspections and subsequent work, if any, for you. It is recommended that a Tiffin Motorhomes authorized service center perform these inspections periodically and perform necessary resealing when necessary.

Proper Sealants for Application

The following sealants are recommended for specific sealing applications, as noted in the table:

Recommended Sealants for Specific Sealing Applications	
SEALANT	**APPLICATION**
Plas-T-Cote	Metal or fiberglass roof
Surebond #SB-140	Rubber laminated to metal roof and ALL SKYLIGHTS
Carlisle #502-LSW Self-Leveling Sealant	Rubber roof over wood base
Silicone Sealant	To cover butyl and other sealants; not to be used as the main sealant
Parbond	To seal across tops of windows and the like on exterior surfaces where silicone is not used

Striping and Decals

The striping and decals (Figure 13-3) on your motor home normally require very little maintenance. Treat these as you would any painted surface on your motor home. Wash them with mild soap and warm water or any retail car soap. Never wash the motor home in direct sunlight, while the motor home is hot, or with hot water. Rinse thoroughly to prevent accumulation of any soap residues.

Figure 13-3. Typical Striping and Decal Design on Motor Home Exterior

Use caution with high-pressure wash nozzles. Keep such nozzles at least 18 inches from the edge of the decals during any washing operations. If this is not followed, high-pressure water nozzles may cause the decals to loosen and subsequently to peel. Test small sections of decals when using any type of cleaning solution.

Important

Do not use solvents such as acetone, MEK, toluene, and the like on the decals. Any solvent including alcohol may soften and smear colors. Do not use lacquer thinner or paint thinner on decals. Do not overcoat the decals with clear paint. Do not allow gasoline or other fuels to come into prolonged contact with the decals. However, if this should occur, immediately flush the affected area with water.

Wheel Care

The care and maintenance of your wheel liners are simple and require no special material or products; simply follow the directions included in the Owner's Information Package for these wheel liners (or the optional Alcoa aluminum wheels). Timely care and cleaning will maintain the appearance of these wheel products for many years.

Important

Do not use harsh detergents, acids, or abrasives which may scratch or dull the surfaces. The applicator cloth, sponge, or soft-bristled brush should be non-metallic and non-abrasive.

Important

Remember to check periodically the tightness of your wheel lug nuts.

Roof Care and Maintenance

Proper care and maintenance of your motor home, including your roof (Figure 13-4), is important for sustained, trouble-free performance. Normal maintenance is simple and easy and does not require special materials.

The roof of the motor home is fiberglass and can be cared for in the conventional manner. Keep the roof clean; one should clean the roof at least every three months. The roof should be professionally inspected by a dealer annually. Sealant may be necessary in the second year of ownership.

Figure 13-4. Roof Line

Warning

Use caution when working on the top of your motor home. The wet roof may be extremely slippery and, as such, a possible safety hazard.

Moisture Management

This section outlines important recommendations to manage moisture in your motor home to avoid moisture-related damage, such as mold, which is caused by moisture. The materials and methods used to construct your motor home were selected in part to minimize air leakage and to create a weather tight exterior shell. However, in order to protect your investment and reduce the risk of moisture-related damage and costly repairs, attention and care has to be taken to manage moisture inside your RV. **Note**: These are only suggestions intended to minimize moisture-related issues with your motor home. If any concerns arise, contact Tiffin Motorhomes' Service Department at (256) 356-0261.

Interior Care of Your RV

Signs of excessive moisture can be obvious, such as water droplets forming on surfaces or wet carpet. Conversely, signs of excess moisture can be subtle, such as condensation forming on metal surfaces. When symptoms appear it is important to timely determine the cause of the excess moisture and take appropriate corrective action to prevent moisture related damage.

Control Relative Humidity

Monitoring and controlling relative humidity within the motor home is one of the most important steps to minimize the risk for moisture-related damage. Ideally, relative humidity should be at 60% or less. Relative humidity can be monitored utilizing a portable hygrometer (Figure 14-5), a small device that measures temperature and relative humidity. Hygrometers are available at electronics or building supply stores. Use exhaust fans, the air conditioner, and/or a portable dehumidifier to manage moisture inside the RV to maintain relative humidity at 60% or less. In cold climates, relative humidity may need to be at 35% or less to avoid window condensation issues. If the motor home is used the majority of the time in a hot-humid climate, it may be difficult to keep relative humidity below 60%. A dehumidifier will help, but is important to check the condensation (water) collection bucket regularly or discharge the condensation (water) directly to a drain.

Figure 14-5. Portable Hygrometer

Avoid Drastic Thermostat Setbacks

Cooler surface temperatures increase the potential for condensation and surface mold growth. To minimize the opportunity for condensation to form on interior surfaces, maintain a comfortable temperature in your RV, and avoid nighttime setbacks of 10 degrees or more. Drastic setbacks that reduce the indoor air temperature quickly can increase the chance for airborne moisture to condense on cool surfaces such as windows. If you are away from your RV for an extended number of days, it is recommended that you do not set the temperature back without taking other measures to manage relative humidity, including operating a dehumidifier with a continuous drain.

Manage Window Condensation

Window condensation issues can be identified by water or ice-build up, usually at the base of the window. The majority of these problems can be addressed by managing moisture generated inside the motor home. Minor condensation issues are not unusual, especially for RVs used in colder climates. The key is to manage this small amount of moisture if evident by wiping the surface, and as discussed in the "Control Relative Humidity" section, maintaining a reasonable relative humidity within the unit. To help minimize window condensation, use exhaust fans vented to the outside, avoid drastic changes in thermostat settings, do not use "vent-free" heaters and use window coverings wisely. For example, make sure to open curtains or blinds during the day to allow air to circulate and warm the window surface.

Carpet Care and Moisture Management

To keep your carpet serviceable and looking new for years to come, the carpet should be cleaned when it shows signs of discoloration or traffic patterns. A steam cleaning system should be used to clean the carpet unless other noted in your warranty information. To manage moisture from the cleaning process, the cleaning system needs to be capable of extracting the excess water from the carpet after it has been cleaned. **Important**: Be sure the carpet is thoroughly dry before closing up the RV for storage. Water from the cleaning process can cause significant damage to the RV if the carpet is not completely dry before closing up the motor home for an extended period.

Cleaning Tile and Wood Floors

Most floors only require a mild detergent and warm water for cleaning. More water on the floor is not always better for cleaning. Use a damp cloth to clean on a regular basis rather than wet mopping each time. For more information regarding the maintenance of the tile and wood floors, see the section entitled, "Woodwork and Floors."

Storage and Other Isolated Areas within the RV

Storage areas are more difficult to condition since the areas are isolated from the main body of the RV. The surfaces of these areas are more at risk for condensation and surface mold growth. To minimize this risk, clean storage areas regularly, and allow an air space between stored items and the exterior wall to promote air circulation.

Use of Un-Vented Combustion Equipment

Un-vented combustion equipment, such as propane stovetops are a source of moisture within the RV. For every gallon of fuel consumed, approximately one gallon of water vapor is evaporated into the air. Whenever possible, operate an exhaust fan in combination with the use of any un-vented combustion appliance within the RV. Water vapor and other combustion byproducts should be vented to the exterior of the RV. The RV owner should strictly follow use and maintenance instructions for safe operation of any combustion equipment, particularly un-vented equipment.

Exterior Care of Your RV

The exterior shell of the RV is the primary weather and moisture barrier. Over the life of the vehicle, the shell will require regular care and maintenance in accordance with other instructions for exterior care. The shell includes the roof, sidewalls, windows, doors, and under-floor of the vehicle. Particular attention needs to be devoted to ensure these components are maintained to ensure a tight barrier against bulk water intrusion. The shell should be inspected periodically for tears, gaps, and condition of sealants in accordance with this owner's manual. Areas that require maintenance should be resealed utilizing a similar, high quality sealant used by the manufacturer. Particular attention should be devoted to ensure the slide outs are functioning properly. Each time a slide out is used it should be inspected to ensure proper operation and sealing. The slide out gaskets should also be inspected to ensure proper sealing when the slide out is operated.

Use of Your RV

It is important to remember that the square footage of an RV is significantly less than that of a single family residence. This fact alone will elevate the relative humidity because there is less volume of air to help absorb or dissipate the humidity. For example, showering and cooking create a lot of humidity in a small area. In these instances, use of an exhaust fan and opening windows should reduce the relative humidity, particularly when living in the RV for an extended period.

Severe Environments

Prolonged use of your RV in severe environments—for example in extremely cold or hot-humid climates, will require extra care and maintenance to avoid moisture-related issues. In both extremely cold and hot-humid climates more attention needs to be focused on controlling relative humidity within the RV. It also may require the use of a portable dehumidifier to manage relativity humidity within an acceptable range. This is discussed further in the "Interior Care of Your RV" section. If you have any questions about moisture-related issues in the environment you plan to use the RV in for a majority of the time, contact Tiffin Motorhomes' Service Department at (256) 356-0261.

Storage of Your RV

During those periods when your motor home is not in use, care must be taken to ensure moisture sources are addressed. Ideal storage of your RV would be in an enclosed climate controlled environment. When this is not possible, the following steps should be taken to ensure moisture is controlled:

- Turn off all water sources
- Turn off all combustion appliances
- Drain the water tank(s)
- Drain the water heater
- Open all closets, cabinet doors and drawers

- Close all windows and entrance doors
- Open a vent or a window enough to allow for some limited ventilation air flow, but not so far as to allow snow or rain to enter
- When storing the RV in high humidity climates (ambient relative humidity is greater than 60% year round), add a dehumidifier drained to exterior to control humidity inside the RV during storage
- Refer to other sections of this owner's manual for additional recommendations

Modifications to your RV

Consult Tiffin Motorhomes for guidance prior to making any modifications to your RV. It is important that changes be completed by a qualified service firm to ensure moisture intrusion or accumulation problems do not occur.

Wet Areas

Areas that are exposed to water spills or leaks should be dried as soon as possible and definitely within 24-48 hours. Drying areas quickly minimizes the chance for moisture damage and possible mold growth, which can begin to form colonies within 48 hours. A variety of methods can be used to help the drying process:

- Remove excess water with an extraction vacuum
- Use a dehumidifier to aid drying
- Use portable fans to move air across the surface
- Because moisture is key to mold issues, treat all signs of condensation and spills seriously and deal with promptly. Failure to deal with a moisture issue promptly may cause more severe issues where none initially existed, or may make a small problem much worse.
- Learn to recognize signs of mold—don't paint over or cover up suspicious discoloration until you are sure it is not mold. The affected surface must first be cleaned and dried; residual staining may be painted.
- Be sure to understand and eliminate the source of moisture accumulation as a part of the clean-up. Otherwise, the same issues will simply reoccur.
- Small amounts of mold should be cleaned as soon as it appears. Small areas of mold should be cleaned using a detergent/soapy solution or an appropriate RV household cleaner. Gloves should be worn during cleaning. The cleaned area should then be thoroughly dried. Dispose of any sponges or rags used to clean mold.

RV Finish Maintenance

Keeping your motor home looking its best at all times involves keeping the paint finish clean and in good condition. This means periodic washing and polishing, as well as getting the finish repaired as soon as possible when the paint is damaged or affected in any way.

The purpose of the paint finish is to provide an aesthetically pleasing appearance and to protect your vehicle from the environment. Your motor home is exposed o many environmental conditions that have an adverse affect on the paint finish:

- Road salts and sodium chloride
- Road tar/bugs
- Bird droppings/tree sap
- Industrial fallout/acid rain/pollution
- UV exposure and moisture

The most common problems resulting from these conditions are corrosion, staining and chemical spotting. These problems can be minimized through regularly scheduled washing and polishing.

Tire and Tire Safety Information

This portion of the Owner's Manual contains tire safety information as required by 49 CFR 575.6. The National Traffic Safety Administration (NHTSA) can be contacted at 1-888-327-4236. Their web site is: http://www.safecar.gov and their address is: NHTSA, 400 Seventh St, S.W., Washington, D.C. 20590.

Section One:

The National Traffic Safety (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site: http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires index.html

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling

- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires

This section presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

Safety First-Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Under-inflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR—the maximum weight the axle systems are designed to carry)

For motor homes: Both placards and certification labels are on a sticker that is located in the rear closet.

Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure—measured in pounds per square inch (psi)—a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kPa), which is the metric measure used internationally).

Vehicle manufacturers determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Checking Tire Pressure

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking
- With radial tires, it is usually not possible to determine under-inflation by visual inspection

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual
- Step 2: Record the tire pressure of all tires
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure

- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and correct tire pressure. These "missing" pounds of pressure are what you will need to add

- Step 5: At a service station, add the missing pounds of air pressure to each tire that is under-inflated

- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure)

If you have been driving your vehicle and think that a tire is under-inflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard of certification label. While your tire may still be slightly under-inflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly under-inflated tire. Since this is a temporary fix, don't forge tot recheck and adjust the tire's pressure when you can obtain a cold reading.

Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in tread-wear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

Tire Balance and Wheel Alignment

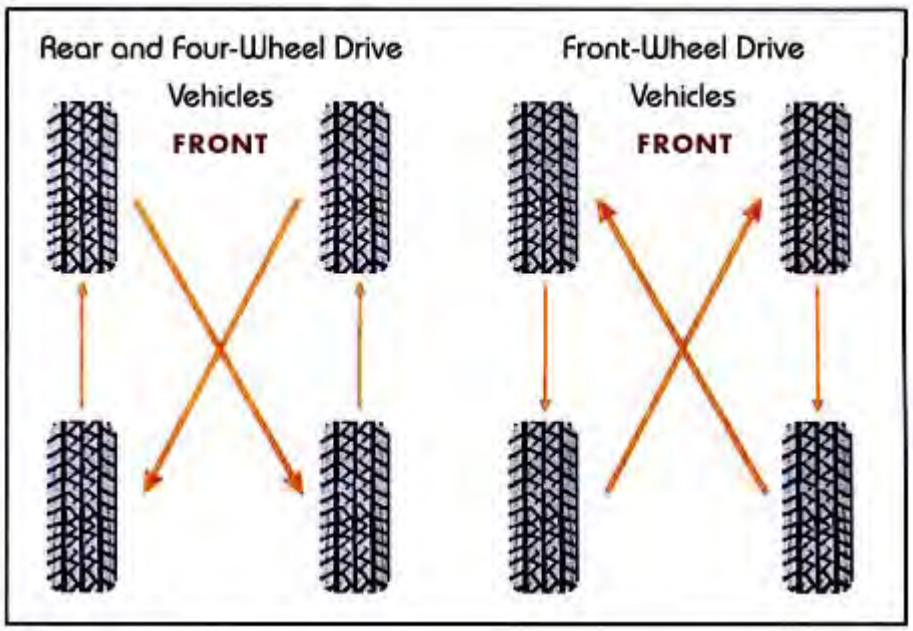
To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

Tire Rotation

Rotating tires from front to back and from side to side can reduce irregular wear (for vehicles that have tires that are all the same size). Look in your owner's manual for information on how frequently the tires on your vehicle should be rotated and the best pattern for rotation.

A Tire Rotation Example

For maximum mileage, rotate your tires every 5,000 miles. Follow correct rotation patterns.



Tire Repair

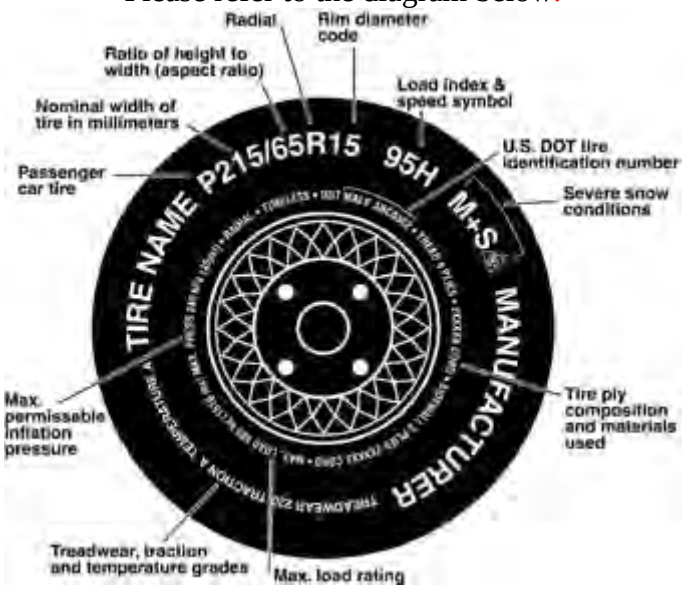
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

Tire Fundamentals

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

Information on Passenger Vehicle Tires

Please refer to the diagram below.



P—The "P" indicates the tire is for passenger vehicles. **NOTE**: Passenger car tires are not recommended for use on trailers, because the capacity ratings are not marked on the side walls of these tires. In the event a passenger car tire is used, the capacity must be de-rated by 10%.

Next number—This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number—This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R—The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number—This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel number.

Next number—This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. **NOTE**: You may not find this information on all tires because it is not required by law.

M+S—The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings.

Speed Rating—The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. **NOTE**: You may not find this information on all tires because it is not required by law.

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

*For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number—This begins with the letters "DOT" and indicated that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact customers if a tire defect requires a recall.

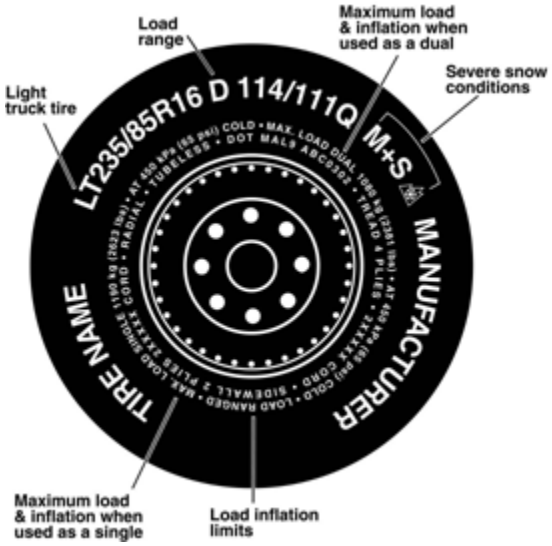
Tire Ply Composition and Materials Used—The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating—This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure—This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Additional Information on Light Truck Tires

Please refer to diagram below.



Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT—The "LT" indicates the tire is for light trucks or trailers.

ST—An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold—This information indicates the maximum load and tire pressure when the tire is used as a dual; that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold—This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range—This information identifies the tire's load-carrying capabilities and its inflation limits.

Vehicle Load Limits

Determining the load limits of a vehicle includes more than understanding the load limits of the tires alone.

On a motor home, there is a Federal certification label that is affixed in the rear closet.

The certification label will indicate the vehicle's gross vehicle weight rating (GVWR). This is the most weight the fully loaded vehicle can weight. It will also provide the gross axle weight rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

For motor homes, in the same location as the certification label described above, there is a vehicle placard. This placard provides tire and loading information. In addition, this placard will show the vehicle's seating capacity for people and a statement regarding maximum cargo capacity.

Cargo Capacities

For motor homes, cargo can be added to the vehicle, up t the maximum weight specified on the placard. For motorized vehicles, the combined weight of passengers and cargo is provided as a single number. If fewer people are traveling, more cargo can be added. If more people are involved, the weight of cargo must be reduced. In any case, remember: the total weight of a fully loaded vehicle, including passengers, can not exceed the stated GVWR.

For motor homes, the water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the RV before it is loaded with people or cargo and is not considered part of the disposable cargo load. Water, however, is a cargo weight and is treated as such. If there If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo or people are being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel and camping needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your RV dealer to discuss the weighing methods needed to capture the various weights related to the RV. This would include weights for the following: axles, wheels, hitch and total weight.

How Overloading Affects Your RV and Tires

The results of overloading can have serious consequences for passenger safety. Too much weight on your vehicle's suspension system can cause spring, shock absorber, or brake failure, handling or steering problems, irregular tire wear, tire failure or other damage.

An overloaded vehicle is hard to drive and hard to stop. In cases of serious overloading, brakes can fail completely, particularly on steep hills. The load a tire will carry safely is a combination of the size of tire, its load range, and corresponding inflation pressure.

Excessive loads and/or under-inflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure.

It is the air pressure that enables a tire to support the load, so proper inflation is critical. Since RVs can be configured and loaded in many ways, air pressures must be determined from actual loads (determined by weighing) and taken from the load and inflation tables provided by the tire manufacturer. These air pressures may differ from those found on the certification label. However, they should never exceed the tire limitation for load or air pressure. If you discover that your tires cannot support the actual weights, the load will need to be lightened.

Tire Safety Tips

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

<u>Section Two:</u>

Steps for Determining Correct Load Limit

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX lbs" on your vehicles placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.

4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.)

5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step #4.

6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this section to determine how this reduces the available cargo and luggage capacity of your vehicle.

Section Three:

Glossary of Tire Terminology

Accessory weight—The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead—The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead separation—This is the breakdown of the bond between components in the bead.

Bias ply tire—A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass—The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking—The breaking away of pieces of the tread or sidewall.

Cold inflation pressure—The pressure in the tire before you drive.

Cord—The strands forming the plies in the tire.

Cord separation—The parting of cords from adjacent rubber compounds.

Cracking—Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT—A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight—The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire—A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove—The space between two adjacent tread ribs.

Gross Vehicle Weight Rating (GVWR)—The maximum permissible weight of this fully loaded motorhome.

Gross Axle Weight Rating ((GAWR)—The value specified as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Hitch Weight—The vertical trailer load supported by the hitch ball.

Innerliner separation—The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall—The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and /or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire—A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating—The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating—The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure—The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight—The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim—The rim on which a tire is fitted for physical dimension requirements.

Non-pneumatic rim—A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic tire assembly—A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight—This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution—The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice—Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter—The overall diameter of an inflated new tire.

Overall width—The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Pin Weight—The vertical trailer load supported by the king pin of a fifth wheel hitch.

Ply—A layer of rubber-coated parallel cords.

Ply separation—A parting of rubber compound between adjacent plies.

Pneumatic tire—A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight—The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire—A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure—This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification/ VIN tag.

Reinforced tire—A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim—A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter—This means the nominal diameter of the bead seat.

Rim size designation—This means the rim diameter and width.

Rim type designation—This means the industry of manufacturer's designation for a rim by style or code.

Rim width—This means the nominal distance between rim flanges.

Section width—The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall—That portion of a tire between the tread and bead.

Sidewall separation—The parting of the rubber compound from the cord material in the sidewall.

Test rim—The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread—That portion of a tire that comes into contact with the road.

Tread rib—A tread section running circumferentially around a tire.

Tread separation—Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI)—The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle capacity weight—The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle maximum load on the tire—The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire—The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CFR 49 571.110) and dividing by 2.

Weather side—The surface area of the rim not covered by the inflated tire.

Wheel center member—In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attached, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel-holding fixture—The fixture used to hold the wheel and tire assembly securely during testing

Tire Pressure

Correct tire inflation pressure is essential to maximizing the life of the tires (Figure 13-7) and assuring the safety of the vehicle and its occupants. Driving with tires that are not correctly inflated for the load of the motor home is dangerous and may cause premature wear, tire damage, and/or loss of control of the motor home.

An underinflated tire will build up excessive heat that may actually approach the vulcanization temperature of the rubber and lead to tread separation and/or disintegration of the tire.

Additionally, underinflated tires will also cause poor handling of the motor home, rapid and/or irregular tire wear, and an increase in rolling resistance of the motor home which, in turn, produces a decrease in fuel economy of operation.

Figure 13-7. Front Tire

An overinflated tire will reduce the tire's "footprint" (i.e., its actual contact with the road); thus, reducing the traction, braking capacity, and handling of the motor home. A tire that is over-inflated for the load that it is carrying will also contribute to a harsh ride, uneven tire wear, and the tire itself will be more susceptible to impact damage.

Maintaining correct tire pressure for each loaded wheel position on the motor home is critically important and must be a part of regular vehicle maintenance.

Tire Maximum Load Rating

Federal law requires that the maximum load rating be molded into the sidewall of the tire. If one looks at a tire sidewall, one may see some "**typical**" information, such as:

Max. Load Single 3640 Lbs at 85 psi cold

Max. Load Dual 3415 Lbs at 85 psi cold

The maximum load allowed for the size tire and load rating and the minimum cold air-inflation pressure needed to carry that stated maximum load are noted on the tire. Using less air pressure would reduce the load-carrying capacity of the tire.

The amount of air pressure one needs depends on the weight of the fully loaded motor home. Consequently, one cannot determine the correct air-inflation pressure, unless one knows the actual weights of the motor home.

Weighing the Motor Home

Earlier, in Chapter 1, the procedures for weighing the motor home were presented (see pp. 1-6 and 1-7). These procedures provided the weighing of a "non-loaded" (i.e., not stocked with the possessions and provisions the user would normally have onboard for travel) motor home. Obviously, any additional weight stored onboard (inside and underneath) the motor home will contribute to the overall weight of the motor home.

If not stored uniformly throughout the motor home, additional weight of the possessions and provisions of the motor-home user will load each axle and each tire differently (front-to-rear and side-to-side distribution of that additional weight). Accordingly, **it is necessary to weigh the motor home fully loaded as the user would have it for travel.** Moreover, **it is necessary to weigh each tire position individually**.

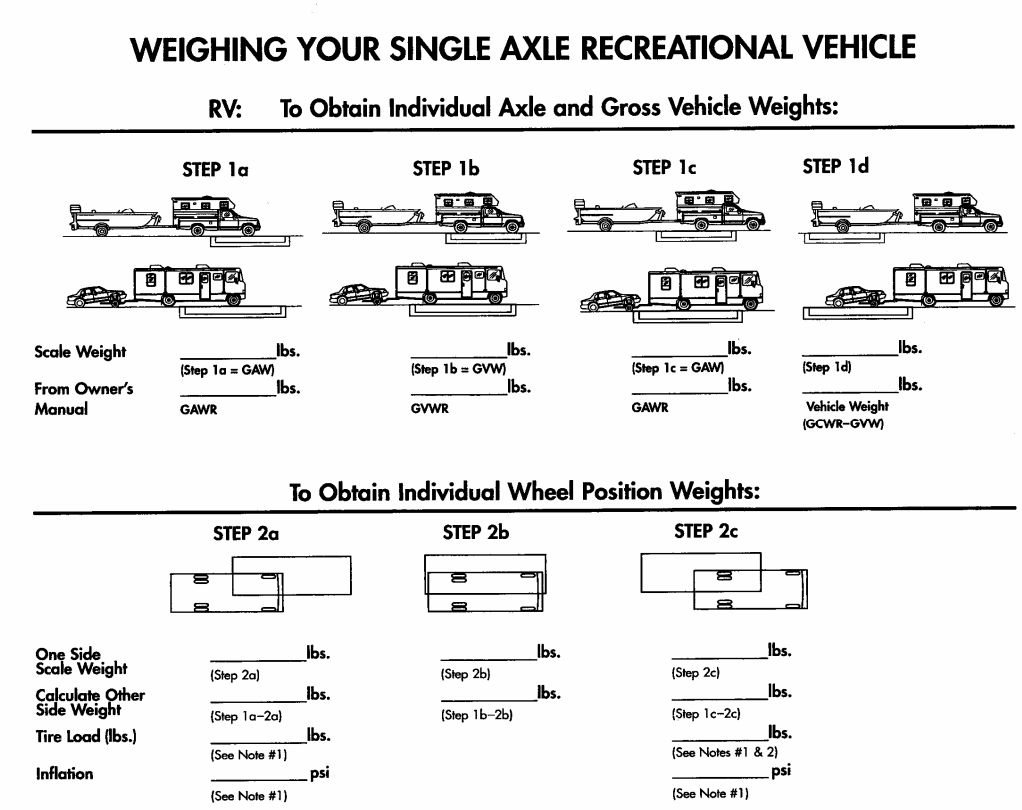
Overloading the motor home can produce problems with the tires, wheels, springs, brakes, drive train, and other motor home assemblies. In addition, an overloaded motor home uses more fuel, is more difficult to handle properly, and can lead to driver fatigue more quickly. In a worst-case condition, if any component should fail, this could result in loss of control of the motor home and subsequent damage.

In certain states, the Highway Patrol routinely weighs motor homes to check for overloaded axle weights. Therefore, there are many good reasons for assuring that the motor home (Figure 13-8) is properly loaded and not overloaded—this can be accomplished through a proper weighing of the fully loaded motor home.

Figure 13-8. Allegro RED Motor Home

One can find various places that have certified public scales where one's motor home can be weighed. For example, moving and storage company lots, farm suppliers with grain elevators, gravel pits, recycling companies, and large-scale commercial-truck stops are some of the possible locations for weighing the motor home. One can also check the Yellow Pages of the telephone book for "scales – public" or "weighers" to determine other locations for weighing the motor home.

A brief overview of the procedure for weighing the motor home is shown in the following figure:



Note 1: From the tire manufacturer's load and inflation tables or the sidewall of the tires mounted on the motor home.

Note 2: If the motor home has duals, read dual capacity from the tire and multiply by 2 (two) to obtain dual-assembly load-carrying capacity.

More detailed information can be found in the manufacturer's literature associated with the chassis and/or the tires provided with the motor home. For example, the table in Figure 13-9 illustrates the inflation pressures for Michelin tires as a function of the loads per position for a specified speed of the motor home. In this manner, one can determine the appropriate inflation pressures for each of the tires on the motor home, as a function of the loads they are to carry on the trip(s) the motor home is to take. Whenever there is a

INFLATION PRESSURES FOR MICHELIN TIRES

Size/Model	Load Range	Inflation Pressures (PSI) Loads Per Position (in lbs.) at Different Pressures 1 Tires=Single (S) 2 Tires=Dual (D)										
7.50R-16 XPS Rib	D (LRD)	PSI		35	40	45	50	55	60	65		
		Lbs	S	1620	1770	1930	2060	2190	2310	2440		
			D	2860	3130	3380	3630	3860	4080	4280		
225/70R 19.5 Pilot XZA	F (LRF)	PSI		55	60	65	70	75	80	85		
		Lbs	S	2475	2650	2835	3040	3220	3405	3640		
			D	4760	5120	5510	5840	6170	6500	6830		
225/70R 19.5 XRV	F (LRF)	PSI		55	60	65	70	75	80	85	90	95
		Lbs	S	2475	2615	2755	2895	3040	3195	3315	3450	3640
			D	4645	4910	5180	5440	5720	6000	6230	6490	6830
245/70R 19.5 XRV	F (LRF)	PSI		65	70	75	80	85	90	95		
		Lbs	S	3340	3440	3540	3640	3740	3890	4080		
			D	6230	6430	6630	6830	7030	7310	7720		
245/70R 19.5 XRV	G (LRG)	PSI		65	70	75	80	85	90	95	100	105	110
		Lbs	S	3340	3440	3540	3640	3740	3890	4080	4190	4335	4540
			D	6230	6430	6630	6830	7030	7310	7720	7880	8150	8600
235/80R 22.5 XRV	G (LRG)	PSI		75	80	85	90	95	100				
		Lbs	S	3595	3815	4035	4280	4545	4675				
			D	6790	7190	7630	8070	8555	8820				

Figure 13-9. Typical Motor Home Tire Inflation Chart

significant change in the loading regimen of the motor home, it would be wise to re-calculate the load weights of the tires to assure optimal use of the motor home.

Frequency of Checking Tire Inflation Pressures

When one has determined the "correct" tire inflation pressures for each of the motor-home tires (as a function of the "fully loaded" condition, of course) and inflated the tires under "cold" (i.e., tires haven't been driven for more than one mile) conditions; then the air pressures in the tires should be periodically checked to make sure that they retain their proper pressures. It is recommended that tire pressures be checked at least once a month (every two weeks would be better) and before any major trip. On long trips, the tires (Figures 13-10, 11) should be checked every "drive" morning. On short trips (a day or less), the tires should be checked before one departs on the trip and again before one returns home.

Check tire pressures when they are "cold"; that is, the tires haven't been driven at all or, at most, less than one mile before being measured. In this manner, the tire pressure has not been increased by the heating associated with tire sidewall and tread flexure associated with traveling. If one must check tires that are warm or hot, remember that they will necessarily read higher than normal. Do not "bleed" these tires down to the "cold pressure" readings, as they will probably then be underinflated when they are actually cool. Don't make any adjustments to tire pressures when the tires are warm or hot, if such can be avoided.

Figure 13-10. Rear Tire

Figure 13-11. Front Tire

To make these tire-pressure measurements, it is recommended that one purchase a high-quality, truck-tire air gauge which has an angled dual head. This type of gauge allows one to check inflation pressures of both the inner dual wheel which has the valve stem pointing towards one and on the outer wheel which has the valve stem pointing away from one. Pressure-sealing valve caps should always be used to protect the valve stems and prevent air from escaping from the valve stems.

Tire Wear, Balance, and Wheel Alignment

In addition to tire inflation considerations, the tires should also be periodically examined for other types of normal "wear and tear." If installed and maintained properly, all tires mounted on the motor home should wear in a smooth, even pattern. If the tires begin to show irregular wear patterns and the motor-home alignment is still correct, then sometimes just rotating the tires by changing wheel position and rotation of the tires will allow the tires to wear evenly.

Check with the chassis manufacturer (Freightliner) and its literature (in the Owner's Information Package) for particulars on maintaining proper wheel alignment. Tire rotation should include the spare tire in the rotation pattern and changing the direction of rotation of the tires. Tires can be rotated front-to-rear and side-to-side.

Tire Cleaning

Proper cleaning of the tires will assure maximum years of service. A soft brush and the normal mild soap should be used to clean the tires. Use care in applying any tire "dressing" product as these contain petroleum derivatives, alcohol, or silicones which may cause deterioration of the rubber, possibly leading to cracking, and accelerate the aging process. In many instances it isn't the actual dressing itself, but the reaction of that product with the antioxidant in the tire. Heat can compound this problem also.

INTERIOR CARE

Important

The fading of upholstery, carpet, and other interior fabrics is generally caused by excessive sunlight. The drapes, blinds, or other shades should be kept closed when the vehicle is parked for an extended period of time to minimize the fading. Normal deterioration of the appearance of such items caused by wear and/or exposure to strong lighting is not covered by the Tiffin Motorhomes Limited Warranty.

Carpet

A weekly routine of vacuuming the carpet and fabrics throughout the vehicle is recommended; the optional vacuum system (Figure 13-12) has a central connection (Figure 13-13) within the motor home wherein a vacuum hose can be connected and the necessary vacuuming performed, as desired. Doing such will prevent an undue accumulation of dirt which can detract from the appearance of the carpeting and, thus, shorten its expected life. Remember to empty or replace vacuum bags before they become overly full—this practice will assure that sufficient vacuuming capability is readily available to handle any and all cleaning situations that may arise. In carpet areas that receive the most sunlight, keeping the curtains closed whenever possible will minimize fading. Also act quickly when anything is spilled or dropped onto the carpet to prevent or minimize staining.

Figure 13-13. Vacuum Hose Coupling

Figure 13-12. Optional Vacuum Cleaner System

To connect the cleaning hose, raise the wall remote inlet valve door, (Figure 14-13) and align hose end coupling with slots on each side of intake opening. Firmly push into intake opening. Make sure hose end coupling is connected and is locked in place. To disconnect the hose, simply push in the slots on each side of the hose coupling and pull hose end straight out.

To start the vacuum cleaner:

1. Push the on/off switch on the main vacuum to the "on" position. Indicator light in switch will come on. Now the vacuum will come on and off by using the wall remote inlet valve.

2. To turn on, raise the door up.

3. To turn off, lower the inlet valve door down and the vacuum will turn off. The main vacuum on/off switch should stay in the "on" position all the time, except when traveling.

4. To turn completely off, return main vacuum on/off switch to the "off" position. The switch light will go off.

Warning

This appliance has a THERMAL PROTECTOR built in the motor to prevent overheating. If motor will not operate or shuts down while in operation wait 30 minutes; it will reset automatically. Turn unit off while it resets. If the motor does not come on, or Thermal Protector trips off again after a short period, service may be needed. A qualified service technician should perform service.

The vacuum cleaning system comes with an array of attachments that can be connected to the hose ends for extensive cleaning purposes. Make sure they are firmly pushed in and twist to hold in place.

For further instructions to change the dust bag, use the attachments, and proper cleaning technique, refer to the specific Owner's Manual located in your motor home.

Fabrics

The fabrics used in this Tiffin motor home for the bedspread, draperies, headboard, and valances contain fire-retardant additives that may be damaged by use of improper cleaning products. Cleaning instructions for these items are DRY CLEAN ONLY. **Water-based products are not recommended for cleaning the fabrics in your new vehicle**. Most water-based, household-cleaning products are not formulated for use on these fabrics (Figures 13-14, 15) and may cause excessive shrinkage or fading. For best results, the fabrics in this vehicle should be cleaned by a professional carpet and upholstery cleaner.

Figure 13-15. Bedroom Fabrics

Figure 13-14. Furniture Fabrics

Spills, spots, or stains should be treated as soon as possible to avoid permanent damage to the fabrics. If a spill occurs, blot the fluid with a dry towel; do not rub the spill as rubbing may cause the liquid to "set" in the fabric and cause a stain. When attempting to clean a spot or stain, always start from the outside and work inward to avoid spreading the stain further. Some stains or soils are extremely difficult or impossible to be removed completely. These stains should receive immediate, professional attention. Spills, spots, stains, or soiled areas are the responsibility of the owner and are not covered by Tiffin Motorhomes Limited Warranty.

Warning

When cleaning the upholstery and fabric of the motor home, do not use lacquer thinner, nail polish remover, laundry soaps, or bleach. Never use carbon tetrachloride or gasoline for cleaning purposes. These substances may cause damage to the materials being cleaned and most are highly flammable.

Walls and Ceiling

The wall and ceiling coverings should be cleaned periodically to maintain a new appearance. Use a non-abrasive cleaner with a soft cloth on the walls. Do not use solvents of any kind, as those solvents may damage the surfaces being so cleaned.

Dashboard

To keep the motor-home dashboard (Figure 13-16) in like-new condition, regularly follow these guidelines:

Figure 13-16. Dashboard and Instrumentation Panel

DO:

- Dust and clean the dashboard with a soft, damp cloth or chamois, wiping the service gently.
- Use a mild detergent and lukewarm water.
- After washing and rinsing the dashboard, dry it by blotting with a damp cloth or chamois.

DO NOT:

- Use harsh chemicals that may damage the dashboard.
- Use cloths containing grit or abrasive particles or kitchen-scouring compounds to clean or dust the dashboard.
- Subject the dashboard to hard, direct blows.
- Use boiling water, strong solvents, or other such materials to clean the dashboard as they will soften the plastic.

Woodwork & Floors

The wood cabinetry (Figure 13-17) should be cared for with furniture polish to sustain the natural beauty and luster of the wood. This procedure will also keep the cabinetry looking new, prevent the wood from drying, and reduce chances of accidental staining or aging.

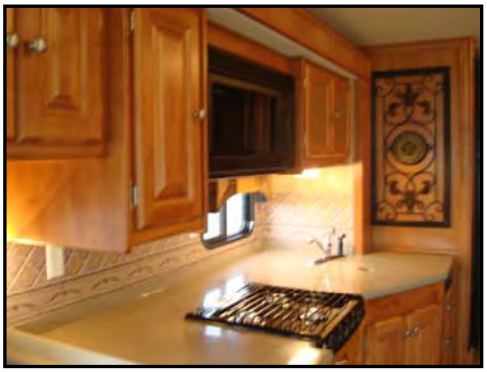


Figure 13-17. Kitchen Cabinetry

Use area rugs and floor mats by the entrance door to trap dirt. Use soap and water to clean the (vinyl) flooring, begin by vacuuming the floor to remove loose dust and dirt. Then, damp mop the floor with a cleaning solution consisting of any standard cleaning solution available through retail-sales outlets (e.g., Wal-Mart, Kmart, Target) or grocery stores. The mop should be damp, but not dripping. Feel free to use soap-based cleaners, scouring powders, steel wool, abrasive cleaners, wax, or polish on the ceramic floor as this floor is impervious to these cleaning agents.

To remove stubborn spots like shoe polish, oil, tar, markers, scuffs, and the like; use a household solvent or nail-polish remover on those spots; then wipe those treated areas with a damp cloth.

To remove chocolate, grease, juice, or wine; use warm water and any off-the-shelf abrasive cleaner (cleansers and the like).

To remove candle wax or chewing gum, carefully scrape off when the material has hardened. For further tips, please see the manufacturer's information sheet in your Tiffin Motorhomes Owners Information Package.

Countertops

To care properly for the countertops (Figure 13-18) in your new vehicle, always use a heat pad or trivet to protect the surface from hot objects that may mar or damage the countertop surface. Hot pans and heat-producing appliances (such as electric skillets), when set directly on top of the countertop, can possibly mar the beauty and finish of the product.

Additionally, since heat-producing appliances can also damage countertop seams, it is essential to check with Tiffin Motorhomes to identify seam locations to avoid them during subsequent use of the motor home. Although solid surfacing is repaired easily, certain steps should be taken to protect it.

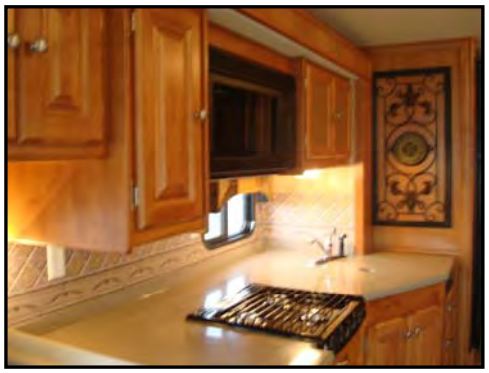


Figure 13-18. Kitchen Cabinetry and Countertop

Be sure to use a cutting board, rather than cutting directly on the countertop surfaces. Although minor scratches and cuts can be repaired, a little care will assure that the countertop surfaces will keep looking new for years.

Avoid using harsh chemicals on the countertop. Wipe the countertop with a damp cloth to remove water spots. For mostdirt and stains, wipe with a damp cloth and use soapy water or ammonia-based cleaners (e.g., Windex).
If a stain doesn't respond to soap and water, for a matte finish, apply an abrasive cleanser and buff it with a Scotch-Brite pad, using a circular motion. Use the same technique in the case of a cigarette burn. If the finish is a gloss finish, please contact the dealer for specific cleaning instructions.

Do not expose the surface to harsh chemicals, such as paint remover, turpentine, nail polish remover, or any stove and drain cleansers. If these chemicals should come into contact with the countertop surfaces, immediately wash off these chemicals, using appropriate safety measures to avoid injury.

In the event of subsequent staining or spotting, sand the affected surface lightly with fine sandpaper (400 grit or finer), then buff in a circular motion with a Scotch-Brite pad.

Accessories

Figure 13-19. Light Fixture

The metallic light fixtures (Figure 13-19), bath accessories, and faucets can be cleaned by wiping with a soft, damp cloth. Washing with warm water will remove dry water spots. Polishing those fixtures with a soft cloth will also enhance their appearance.

Do not use cleaners that contain harsh or abrasive chemicals. Alcohol or other similar solvents should never be used.

Detectors

The CO/LP gas detectors are self-contained and DO NOT require any maintenance other than normal cleaning and periodic testing. The smoke detector installed in the motor home is a nine-volt, battery-operated detector. The CO/LP gas detector is wired directly to the house batteries.

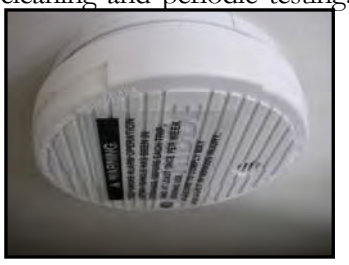


Figure 13-20. Smoke Detector

The batteries in the smoke detector (Figure 13-20) need to be tested periodically and replaced, when necessary (usually semiannually). When cleaning the case on any of the detectors, use a damp cloth or paper towel. Do not spray cleaners or wax directly into the case as this action may cause false alarms or hinder the normal operation of the detectors.

An inexpensive battery tester, available from any local electronics retailer, would be a good investment to make. This tester would allow checking of the batteries in the various alarms, any flashlights used in the motor home, and batteries in other appliances (e.g., portable radios, MP3 players, CD players, PDAs, and various electronic games) which may be in the motor home during travels.

Condensation

Important

Since surface condensation within the motor home cannot be controlled by the manufacturer, damage caused by condensation is not covered by the Tiffin Motorhomes Limited Warranty.

Damage may occur to your vehicle if excessive condensation exists. Accumulation of condensation on surfaces within your motor home occurs when warm, moist air contacts a cool surface. It is most evident on the inside of windows, but this problem can be controlled by:

1. Slightly opening a window or roof vent to allow the moisture to escape from the motor home.

2. A small dehumidifier is also very effective in removing moisture from the air.

Condensation levels are highest during times when a person is cooking or taking a shower in the motor home, but these occasions are not the only times condensation is present. Walls and ceiling panels may become wet when the moisture accumulates on these surfaces. Tiffin Motorhomes does not recommend the use of any catalytic heaters because of resulting extensive condensation.

ROUTINE MAINTENANCE SCHEDULES

Important

Always follow the chassis maintenance guidelines found in the chassis manufacturer's owner's manual.

All routine maintenance is the responsibility of the owner and is not covered by the Tiffin Motorhomes Limited Warranty. Use the maintenance record found in Chapter 15 to record all performed maintenance as required.

Please note that any damage caused by improper or unperformed maintenance is not covered by the Tiffin Motorhomes Limited Warranty. Items supplied by other manufacturers may require specific individual maintenance not listed herein. Please refer to the manufacturers' suggested maintenance guidelines in the Owners Information Package.

Important

Cosmetic adjustments and alignments must be performed within the first three months from date of original purchase for warranty consideration. Thereafter, these items are considered routine maintenance.

Monthly

- Check the water levels of the batteries.

Every Three Months

- Check LP gas lines for leaks with soap solution or leak detector.
- Clean the microwave hood exhaust fan filter and blades.
- Test smoke alarm and carbon monoxide/LP gas detector.
- Check operation of windows, latches, and hinges.
- Clean the roof ducted air conditioner filter or filters.
- Clean and inspect door and window seals; reseal where necessary.
- Inspect and reseal around the tub and shower area where necessary.
- Lubricate the exterior door hinges and latches with a graphite (silicone) lubricant.
- Check, clean, and tighten battery cables and inspect batteries for proper fluid levels.

Every Six Months

- Inspect the slide-out for proper seal. If realignment is necessary, please contact an authorized Tiffin Motorhomes Service Center.
- Inspect the exterior rubber slide-out seals and apply an UV inhibitor, such as 303 Protectant.
- Change the battery in the smoke detector.
- Rotate tires as recommended by the tire manufacturer.
- Check all gas appliances for proper operation.
- Have the LP system inspected by a qualified technician.
- Lubricate the movable parts on the entrance step.
- Change the batteries in both the smoke detector.
- For the *optional* washer/dryer, inspect the water hoses (both the hot and cold supply lines) to note any bulges, kinks, cuts, wear, or leaks. Especially note the hot-water hose, as this tends to degrade faster than the cold-water hose. Replace if hose feels "soft" or "spongy."

Annually

- Inspection of roof seams and joints should be performed by an authorized Motorhomes Service Center. If resealing is necessary, it is the owner's responsibility and is not covered by the Tiffin Motorhomes Limited Warranty.
- Sanitize the fresh water system.
- Wax and buff all gel-coat surfaces on the vehicle as described previously in this chapter.

Winterizing

To store your vehicle for the winter months, it is necessary to winterize the water system to help prevent freezing of this system. To do this, follow these instructions:

1. Drain all the water from the water system including the holding tank(s), the hot water heater, and the water tank; also drain the *optional* water filter, if installed. For the holding tank(s), open the gate valve(s) to drain the tanks. *Turn off water heater before draining to prevent burning element out. (NOTE: This procedure is to be performed **only** at a wastewater pumping station to prevent dumping of contaminated water elsewhere). For the hot water heater, remove the outside cover and then remove the drain plug. When this tank is drained, replace the drain plug and then replace the cover. For the water tank, open the green-handled valve to drain the tank; then close the green-handled valve. If an *optional* water filter is installed, remove the filter cartridge and store it in a clean environment (e.g., reseal-able plastic bag); empty any excess water from the filter housing and replace the housing.

2. Turn the by-pass valve located in the exterior sanitation compartment to the "by-pass" position to prevent filling the water heater tank with antifreeze.

3. Disconnect the inlet connection to the water pump [in the sanitary service compartment under the motor home] (see Figure 13-21). Attach the supplied, vinyl hose (via the plastic coupling on the hose) to the inlet connection and hand-tighten that connection; do not over-tighten.

4. Place the other end of the hose into a gallon of freshwater system antifreeze (one can refer to the local Tiffin Motorhomes dealer or representative for the freshwater antifreeze formulation for your specific area). NOTE: Do not use automotive antifreeze; use only antifreeze approved for RV applications; otherwise, damage to the systems being protected may result.

Figure 13-21. Winterizing Process

5. Turn "on" the water pump to start the flow of antifreeze. Turn "on" each faucet, one at a time, and allow pure antifreeze to run through that piping. Let about one cup drop into the drains to protect the traps.

6. When all the antifreeze is withdrawn from the bottle, disconnect the clear vinyl hose from the water-pump inlet connection and reconnect the inlet line to the water pump. (This may require more than one gallon of antifreeze).

7. When the winterizing process is completed, turn the water pump "off" and then reconnect the water line. Store the vinyl hose for future use.

8. Open the water supply valve that controls flow from the pump to the tank to help prevent freezing on that water line.

Note: Remember, the motor home also has an exterior shower; therefore, this system must be winterized, as well.

If the motor home is equipped an optional ice maker and/or an optional washer/dryer, the following additional steps should be taken:

Washer/Dryer (*optional*)

1. With the washer/dryer power in the "off" position, put ½ quart of R.V.-type antifreeze in the drum; then close the door.

2. Turn the Program Selector knob to "spin." Then turn the power "on" and let the machine go through the spin cycle for one or two minutes.

3. Turn the power "off" and then unplug the washer/dryer or disconnect the power cord.

4. Shut off both water faucets and then disconnect the water-inlet hoses from the faucets and drain them. This completes the process.

Alternative Washer/Dryer Winterization through the Freshwater System

1. If one is currently pumping antifreeze through the freshwater system, follow these steps to winterize the washer/dryer:

2. With the washer/dryer power "off," turn the Wash Temperature knob to "Warm."

3. Turn the Program Selector knob to "Regular Wash" (located in the "Cotton Heavy Duty" section of the knob). Then turn the power "on."

4. When you see antifreeze in the drum, turn the power "off." Then advance the Program Selector knob to "Spin."

5. Turn the power "on" and allow the drum to spin for about 30 seconds.

6. Turn the power "off." This completes the process.

Depending on whether your particular motor home has a Dometic refrigerator with an optional ice maker or not, there are some steps to be taken in winterizing the optional ice maker associated with that refrigerator. For the optional ice maker, the proper steps to be taken are these:

Dometic Refrigerator Ice Maker (*optional*)

1. Shut off the water supply to the ice maker.

2. Place a shallow pan under the water solenoid valve.

3. Remove the inlet fitting to the ice-maker water solenoid valve. Then drain the water from the supply line.

4. Remove the plastic nut and water line from the outlet side of the water solenoid valve. Then drain the water from that line. **Note**: Do not lose the metal insert from the plastic water line. One recommended way to secure this insert is to place it into a "zip lock" bag, seal the bag, punch a small hole through the top of the bag above the zip-lock, insert any type of "twist-tie" (i.e., paper-coated, flexible metal wire) through the hole, and then secure that bag to the outlet line for safekeeping.

5. Connect a source of compressed air (up to 20 psig, maximum) onto the inlet fitting of the water solenoid valve. Apply AC power to the solenoid valve for forcing the ice-maker mold assembly through several harvest cycles.

6. Remove the plastic cover from the mold assembly. The bail arm must be in the "down" (or "on") position.

7. Start the harvest cycle with a flat-blade screwdriver inserted into the center of the small gear.

8. Turn the gear counterclockwise (CCW), when the hold switch closes, the mold assembly will continue to operate through the harvest cycle. During the water-fill sequence of the harvest cycle, the compressed air will blow out the water trapped in the solenoid valve.

9. Repeat the harvest cycle operation (i.e., steps 7 and 8) several times. Note: Damage to the solenoid valve can occur if the AC power is applied for more than 20 seconds.

10. Reconnect and tighten the lines on the water solenoid valve. The metal insert must be installed in the plastic water line going to the outlet side of the water solenoid. Leave the water supply turned "off" until temperatures are above 0º F (-18º C).

11. Dry out the ice-maker mold assembly with a soft cloth. Place the bail arm in the "up" ("off") position.

De-Winterizing

1. To de-winterize your vehicle, open both of the low-point drains to allow the antifreeze solution to drain from the water system.

2. Next, close the low-point drains and connect your vehicle to the city water system. Put water in the freshwater tank and pump at least one gallon through the water pump to remove the antifreeze from the water pump. Keep the water heater in the bypass mode.

3. As in winterizing, open the kitchen faucet, bath faucet, inside and outside showers, turning "on" both the hot- and the cold-water valves and flushing the stool until the antifreeze solution is flushed out of the system and the water flow is clear.

4. Once the system has been flushed, open the water heater bypass valve. Open the freshwater tank supply valve from the pump and the icemaker valve.

5. Reinstall the (*optional*) water filter. Fill the water heater and hot water lines before turning the water heater on.

6. Be sure to close the fresh water tank drain valves to allow the tank to fill.

Washer/Dryer (Optional)

1. Flush the water pipes.

2. Reconnect the water inlet hoses to the corresponding HOT and COLD faucets; then turn "on" both water faucets.

3. Plug in the washer/dryer and /or reconnect the power.

4. Run the washer through the "Express" cycle with ½ tablespoon of powder detergent (or liquid equivalent) to clean out the antifreeze. This completes the process.

Chapter

14

Maintenance & Data Charts

RV Owner's Data Sheet

Please enter the following information in the table for your future use:

Allegro RED: Year: _____ Model #: _____ Tiffin Serial #: _____

Appliance	Brand	Model Number	Serial Number
Refrigerator			
Washer / Dryer (*optional*)			
Water Heater			
Microwave			
Inverter/Converter			
Television, Front			
Back-Up Monitor, Rear			
AM/FM/CD Stereo			
DVD Home Theater			
Air Conditioner			
Generator			

Reproduction Master – Copy this sheet and use copy to maintain your maintenance records. You may wish to keep the completed sheets in a three-ring binder for your permanent record.

RV Owner's Maintenance Record

Please enter the following information in the table for your future use:

Allegro RED: Year: _____ Model #: _____ Tiffin Serial #: _____

Date / Mileage	Service Work Performed	Performed by	Cost ($)

Reproduction Master – Copy this sheet and use copy to maintain your maintenance records. You may wish to keep the completed sheets in a three-ring binder for your permanent record.

RV Owner's Maintenance Record

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